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Agriculture and Water Quality. International Perspectives. Edited by John B. Braden and Stephen B. Lovejoy. Boulder, CO: Lynne Rienner Publishers, 1990, 224 pages, \$25

Reviewed by Stephen R. Crutchfield

How does agriculture affect water quality? In this book, the question is addressed but unresolved. The 1989 conference that produced this doggedly serious but reservedly informative book brought together some prominent researchers in the field to discuss possible solutions to the water quality problem, to present experiences with alternative agricultural policies to prevent water pollution at home and abroad, and to consider the effect of these policies on international competitiveness in agricultural products.

One of the difficulties with books that are proceedings of professional meetings is that they are often less cohesive and unified in theme and scope than books written to stand on their own. The editors (who also helped organize the conference) assembled some interesting papers. Do the papers, when collected as a book, convey the same information to the reader as the conference did to the participants? Does the book serve a useful purpose for interested readers in presenting a well-rounded overview of water quality issues? My answer to both questions is a qualified "yes."

The papers are generally descriptive in nature. In what is becoming a rarity in modern economics, no mathematical models appear. The chapter, "Pollution Control by Incentive Policy," by Sergeron, is an example of this. The issue of whether to control externalities by regulation of quantities or through application of taxes is an old one. Many detailed mathematical treatments of this issue have been published. Sergeron avoids math for a simpler analytic approach. A descriptive approach using commonly understood economic principles illustrates the differences between taxing agricultural externalities or output, providing incentives for adoption of alternative farm management practices, and applying *ex-ante* incentives through liability rules to prevent agricultural pollution. The other papers in this collection likewise eschew mathematics. The economist looking for new techniques in modeling agricultural externalities will be disappointed. Readers who look for a more

common-sense approach to understanding the issues based on a strong economic framework will find the flavor and tone of these papers refreshing.

The best part of the book is the beginning, assessing water quality issues and comparing the use of incentives with the use of regulations for controlling agricultural water pollution. Any economist with only a basic familiarity with these issues would finish this section with a much better understanding of how agriculture affects water quality and which policy tools solve water quality problems. Less satisfactory is the second part of the book, which consists of five papers relating policy experiences in Sweden, Denmark, Australia, the United States in general, and California specifically. The quality of the papers is uneven. Reichelderfer's discussion of U.S. Federal policy is outstanding, and the two papers on European water quality issues present a good contrast to the U.S. experience. However, the discussion of California's Proposition 65 by Hefland and Archibald contains little economics and is unrelated to water quality. Musgrave's paper on salinity problems in Australia is more of a political science discussion of institutional arrangements than an economic analysis of water quality issues. The book's third part, with papers on international considerations by Runge and by Young, is more cohesive, and makes some interesting points regarding environmental protection statutes as substitutes for trade barriers.

The uneven style and spotty economic content of some of the papers in this book are disappointing but fairly characteristic of proceedings publications. The editors should have taken a stronger hand in guiding the authors and shaping their contributions, rather than simply reproducing the papers as they were presented at the conference. Additional editing and revision would have given the book a greater sense of cohesion and unity of style. Some papers are too long, and others fail to blend with the subject material.

Even so, I recommend the book. Despite the flaws, it still contains much interesting and useful material. I see two types of readers who may find this book a worthy addition to their collections. First, the agricultural economist interested in a general overview of the water quality problem would find some background material and summaries of options for addressing the agriculture/water quality dilemmas. Second, the environmental scientist can gain an understanding of the economic factors that lead agricultural production to harm the water supply.

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Boldly Going Where Others Have Gone Before

***Forest Resource Economics and Policy Research: Strategic Directions for the Future.* Edited by Paul V Ellefson. Boulder CO Westview Press, 1989, 403 pages, \$59**

Reviewed by Jeffrey C. Stier

Forest economists have not yet reached the stage of diminishing returns in identifying topics for further research. At least that is the impression one gets from the more than 100 "strategic directions" and more than 300 individual research topics identified by the volume's 31 authors in this, the fourth such review of the field over the past 50 years and the third since 1953. The editor makes no attempt to attach priorities to the individual research areas identified, and the 20 research directions that are listed in the concluding chapter are broadly defined. Consequently, the book presents a large and varied research menu rather than a set of "strategic directions" for future research. Readers will have to decide for themselves the relative importance of the individual topics, but perhaps that is as it should be.

Since the beginning of this century, the United States has gone from a Nation in which the forest industry exploited a mature timber resource, and for which the main determinants of timber supply were the costs of harvesting and transportation, to a situation in which timber must be grown as a crop with all the associated production costs. This transition has increased the need for more efficient timber production. However, the past three decades have also witnessed an enormous growth in the public's demand for noncommodity outputs from forests, ranging all the way from traditional forms of recreation to the more recent emphasis on protection of biodiversity. And, superimposed on these changes has been the increasing importance of international economic linkages. All of these changes have resulted in greater demand for forest economics and policy research.

The first part of the book examines the historical, institutional, and investment context of forest economics and policy research. Ellefson's chapter examines the research infrastructure in terms of numbers of scientists and projects, and explores the changes in level and allocation of investment in research over time and by agency. The discussion of changes in funding levels, however, is somewhat difficult to follow because Ellefson never states explicitly whether the data reported in the tables are in constant or current dollars. A helpful strategy would have included the discussion of what agencies conduct for-

estry research and how such research is coordinated at the national level before launching into the details of the research infrastructure. Instead, the reader is enlightened two chapters later, and the intervening chapter on research evaluation and planning seems totally out of context. (It is interesting to note that Larry Tombaugh's call for competitive funding of forest economics and policy research is echoed in the National Research Council's recent report *Forestry Research: A Mandate for Change* (National Academy Press, Washington, DC, 1990).)

The second part of the book consists of 20 chapters, each of which deals with a specific area within forestry. The chapter on institutional arrangements for directing the use and management of forests by Perry Hagenstein should especially interest resource economists. He calls attention to the long-term changes in the nature of property rights and the need for the research community to keep both public and private landowners abreast of the implications of such changes. Forest economists have given only modest attention to evaluation of existing institutions and even less to anticipatory research on the development of new and imaginative institutional alternatives. Yet, the future will likely be characterized by increased emphasis on management of forests as ecosystems, by greater recognition of the interrelationships between forest and agricultural lands, and by incorporation of principles of landscape management into resource conservation and development policies. The marginal value of research in this area would seem to be very high indeed.

An institutional factor that has long irked foresters is the *ad valorem* property tax. Objections to the property tax go back to 1819, when Governor Walcott of Connecticut pointed out that owners of forestland must pay the tax for many years but receive income only when they harvest trees. In the early part of this century, F. R. Fairchild's theoretical analysis confirmed the bias of the property tax against capital-intensive, long-maturity enterprises like forestry. The argument has become so well entrenched in the forestry community that virtually every State has an alternative to *ad valorem* taxation of forestlands. Yet, as David Klemperer points out in his chapter on taxes and forestry, there has been almost no empirical research to determine the effectiveness of these alternative programs in promoting sound forestry practices, the administrative costs they impose on local and State governments, or the distribution of benefits.

The situation is much the same for research on the income tax. The nature of timber production is such that many costs must be paid well in advance of the

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receipt of income. Revenue from timber sales can qualify for capital gains treatment, but the Tax Reform Act of 1986 removed the principal advantage of such treatment. Advocates of capital gains for timber sale income noted that their arguments were damaged severely by the absence of any credible empirical research on the impact of the capital gains on forest management decisions. Past research has typically been based on analytical models or simulation exercises. But as Klemperer points out, if research is to have policy relevance, there is a strong need to document empirically the effects of income tax provisions on forest management decisions.

The chapter on forecasting demand and supply of forest resources, products, and services focuses almost exclusively on timber. It provides a good overview of recent equilibrium market models developed in the United States and a brief discussion of work in other countries and by international agencies. This is one of the few instances in which forest economics and policy research outside the United States is recognized. The discussion of the market models is surprisingly frank. For example, the author, Clark Row, readily admits that data deficiencies are frequently overcome through the use of "expert judgment" and that model validation is often *ad hoc* and judgmental, frequently being based largely upon the credibility of the projected scenarios. Data are even more limiting at the subregional level. Yet, as Henry Webster and Daniel Chappelle discuss in their chapter on community and regional economic growth and development, such data are crucial for formulation of rational policies.

Readers with a careful eye and the patience to wade through the entire book will detect a number of interconnecting threads that could lead to some quite interesting research questions. For example, Jay O'Laughlin notes in his chapter on industrial organization that changes in the ownership of firms can influence the structure and performance of the forest products industry. But, might not changes in ownership also have implications for community stability, as well as for the pattern of forest-based regional economic development, and even for international trade flows? O'Laughlin does not raise these questions. Yet they have rarely been addressed by past research, and answers to them would seem to be important in the formulation of economic development strategies and antitrust policies.

The book has its shortcomings, including an annoying number of grammatical errors. The organization and coverage of topics are uneven. For example, four chapters deal directly with timber, that is, with production and harvesting of wood fiber, management and protection against fire, insects, and diseases, and marketing of forest products. However, they are not grouped together. Production and valuation of recreation and water are each accorded a chapter, but neither wildlife nor range is given separate treatment. A chapter is devoted to nonindustrial forests but none to other ownerships.

The main audience for this book will be the community of forest economics and policy researchers, but I doubt that many will read it from cover to cover. The most

The chapters include (1) "Development and Accomplishments of Research Programs" by Henry J. Vaux and H. R. Josephson, (2) "Problem Orientation and Investments in Research Programs" by Paul V. Ellefson, (3) "Impact Evaluation and Planning of Research Programs" by David N. Bengtson, (4) "Organizational Involvement and Management of Research Programs" by Larry W. Tombaugh, (5) "Institutional Arrangements Directing Use and Management of Forests" by Perry R. Hagenstein, (6) "Economic Structure and Performance of Forest-Based Industries" by Jay O'Laughlin, (7) "Development, Dissemination, and Adoption of New Technology" by Allen L. Lundgren, (8) "Forecasting Demand and Supply of Forest Resources, Products, and Services" by Clark Row, (9) "Social and Economic Growth of Developing Nations" by Hans M. Gregersen and Jan G. Laarman, (10) "International Trade in Forest and Related Products" by Thomas R. Waggener, (11) "Wood Fiber Production" by J. Michael Vasievich, (12) "Timber Harvesting" by Frederick W. Cubbage, (13) "Production and Valuation of Forest and Wildland Recreation" by George L. Peterson and Thomas C.

Brown, (14) "Policy Development and Program Administration" by Paul V. Ellefson and James R. Lyons, (15) "Resource Assessment, Information Management, and Communications Technology" by Thomas E. Hamilton, (16) "Forestry Sector Environmental Effects" by J. E. de Steiguer, (17) "Community and Regional Economic Growth and Development" by Henry H. Webster and Daniel E. Chappelle, (18) "Taxation of Forest Products and Forest Resources" by W. David Klemperer, (19) "Distribution and Marketing of Forest Resource Products" by William G. Luppold and Gilbert P. Dempsey, (20) "Forest Resources Law and Legal Processes" by Benjamin V. Dall, (21) "Management of Fire in Forested Environments" by Thomas J. Mills, (22) "Management of Insects and Diseases in Forested Environments" by Lloyd C. Island, (23) "Structure and Performance of Nonindustrial Private Forests" by William B. Kurtz, (24) "Production and Valuation of Water from Forested Watersheds" by K. William Easter, (25) "Challenges and Agendas for Forest Resource Economics and Policy Research in the Coming Decade" by H. Fred Kaiser, Richard L. Porterfield, and Paul V. Ellefson.

useful approach for current researchers and for those outside this community would probably be to focus on selected chapters that cover topics of special interest

The book nevertheless serves as a useful fourth benchmark in the evolution of forest economics and policy research

From the winter of 1989 to the spring of 1991, the Journal published a series of essays on the social sciences in agriculture, particularly agricultural economics. Some essayists lauded the performance of the profession, others criticized. All presented viewpoints subject to challenge. We decided to pull the series together under a single cover and explain its significance.

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