Linking Agricultural and Environmental Policy

Agriculture and the Environment *By Tim T Phipps, Pierre R Crosson, and Kent A Price (eds) Washington, DC Resources for the Future, 1986, 298 pp, $10*

Reviewed by Marc O. Ribaudo

Agriculture has profoundly affected the environment since people first began to farm Agriculture converts large areas of land to crops, increases the potential for soil erosion, and introduces chemicals into the environment As clean air, clean water, undisturbed ecosystems, and wildlife become scarcer, the conflicts between agriculture and the environment take on greater importance Governments are often caught in the middle of such conflicts by trying to satisfy many interests Environmental policies have been adopted to protect environmental resources But agricultural policies and programs have been adopted that encourage agricultural production and promote the use and degradation of environmental resources Conflicts in environmental and agricultural policies need to be addressed in books such as this collection of conference papers

The National Center for Food and Agricultural Policy sponsored a conference on Agriculture and the Environment in April 1986 that was designed to address the state of knowledge about policy-relevant links between agriculture and the environment and to identify research needs and priorities The book was derived largely from the major papers and formal discussions presented at the conference The editors had four goals (1) to provide an overview of environmental problems associated with agriculture, (2) to establish a framework for the evaluation of problems and policies, (3) to consider policy alternatives, and (4) to discuss and evaluate policies

The chapters by the editors present an overview of the issues and summarize the policy-relevant lessons The other chapters are separate papers on environmental problems confronting agriculture and issues in policy analysis Most chapters are followed by a formal discussion by another expert

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The papers include (1) "Agriculture and the Environment· An Overview" by Tim T Phipps and Pierre R Crosson, (2) "Soil Erosion and Policy Issues" by Pierre R Crosson, (3) "Irrigated Agriculture and Mineralized Water" by Robert A Young and Gerald L Horner, (4) "Problems of Pesticide Regulation. Health and Environment Versus Food and Fiber" by Erik Lichtenberg and David Zilberman, (5) "Pesticides and Public Policy A Program for Research and Policy Analysis" by John M Antle and Susan M Capalbo, (6) "Incentives for Agricultural Development of U S Wetlands. A Case Study of the Bottomland Hardwoods of the Lower Mississippi River Valley" by Randall A Kramer and Leonard A Shabman, (7) "Institutional and Neoclassical Approaches to Environmental Policy" by Alan Randall, and (8) "Induced Innovation in Agriculture and Environmental Quality" by C Ford Runge.

Several authors deal with specific environmental problems associated with agriculture soil erosion, pesticide use, wetlands conversion, and dissolved minerals In a book of this type, I would have expected each chapter to have the same purposes as those for the book The authors succeed to varying degrees Crosson, in the chapter on soil erosion, does a good job of outlining the problems associated with soil erosion, and he makes a strong case for placing more emphasis on offsite impacts than on onsite impacts Crosson also contrasts voluntary vs regulatory programs for inducing farmers to reduce soil erosion, and he discusses the merits of dealing with erosion at the site of offsite damages, rather than on the field where erosion occurs A discussion of how current agricultural policies and programs (such as price supports, cross-compliance, and the other provisions of the Conservation Title of the 1985 Food Security Act) might affect the amounts of erosion generated by agriculture would have strengthened the presentation Crosson should have discussed the Conservation Reserve Program, which is being touted in some corners as the most environmentally beneficial farm program in history

In their discussion of irrigated agriculture and mineralized water, Young and Horner present a complete picture of the salinity problems in the West and the surrounding policy issues They present a lengthy outline of the nature of the problems, the role of water policy in creating the current problems, and the conflict between optimal policy and current water law

Pesticide use and environmental issues are discussed in two chapters. Lichtenberg and Zilberman explore several issues on the tradeoffs between agricultural productivity and environmental quality and human health They present a framework for estimating the productivity of pesticides, taking into account pest resistance Resistance to pesticides is an important component in the derived demand for pesticides. Lichtenberg and Zilberman demonstrate how the failure to account for the social cost of pesticide use leads to overuse They discuss some current policies and practices that encourage the overuse of pesticides, such as the emphasis on product appearance. Their presentation could have been strengthened considerably by a section on the impacts of pesticides on human health and the environment They do present a framework for estimating the costs to human health from pesticide use, but suggest no such framework for estimating environmental costs Economists have at their disposal tools for estimating the value of various nonmarket goods, including environmental quality One should not forget it was concern over the environmental impacts of pesticides that led to Carson's *Silent Spring* and to an increased awareness of environmental issues

Lichtenberg and Zilberman present Integrated Pest Management (IPM) as a technology that would "induce farmers voluntarily to narrow—if not close—the present gap between the farmers' interest and the social interest in pest management " (p 138) However, IPM does not bring us any closer to solving the problem of getting farmers to account for social costs in their production decisions IPM alters only the demand for pesticides, so overapplication from a societal standpoint would still be a problem. Recommendations for policy actions addressing the apparent conflicts between current agricultural policies and environmental policies would have been a logical conclusion

The editors must also have concluded that the issue of pesticides and environment required more coverage, because they added a paper by Antle and Capalbo that was not presented at the conference Antle and Capalbo address the effect of pesticides on health and the environment, and they present a framework for studying pesticide regulation It measures the benefits and costs of pesticide use to agriculture and the benefits and costs of pesticide use to society, and it suggests interventions when social benefits do not equal or exceed social costs

Kramer and Shabman's paper on the agricultural development of wetlands is the most technical. However, the economist will find it an excellent piece of research Kramer and Shabman use a simulation model to assess the economic feasibility of converting bottomland hardwood forests in the lower Mississippi Valley into cropland, given policies and laws such as the agricultural and forestry tax codes, agricultural price and income support programs, and wildlife habitat incentives They show how the profit motive affects private resource decisions, and they demonstrate that policymakers need a good understanding of economic relationships to design effective policies

Randall's paper on institutional and neoclassical approaches to environmental policy was interesting, but it did not match the stated conference objectives Randall did not discuss specific policies, but presented reasons why different schools of economic thought arrive at different policy recommendations He concluded that policymakers are left to make decisions in the face of conflicting advice and that it is not yet clear how the decision process might be strengthened It would have been useful to see evidence that conflicting advice from economists is why many policy decisions are made without consideration for economic efficiency

Runge's paper on adaptive innovation presents a framework for analyzing technological change, environmental quality, and forces that direct the formation of environmental policy Runge concludes that environmental goods become more valuable relative to agricultural products as a country develops and national income rises His discussion might have been extended to include a more explicit description of the link between institutional change and environmental quality. Runge could have also devoted less space to explaining why environmental issues are currently of major concern That environmental quality is a major concern in this country is a fact, and the basic premise of the book

I found the discussants' reviews of the individual papers quite useful The discussants generally included examples and expanded on the authors' arguments

The final chapter by the editors summarizes the conference policy findings and identifies the common themes the roles of efficiency and equity in formulating policy, the need to fill gaps in knowledge about the links between what happens on the field and in the environment, the need to place values on environmental commodities, and the need to evaluate the environmental effects of current price support and subsidy programs However, the editors could have strengthened their summary by evaluating policy alternatives and by making their own recommendations They do not discuss

important subjects such as groundwater contamination, biotechnology, and low-input agriculture The book itself would be more complete if a chapter dealing with these subjects were added.

The editors did not include one of the most useful portions of the conference in the book The conference concluded with an excellent panel discussion that added several interesting perspectives to the proceedings: a discussion of the importance of the Conservation Reserve Program, the potential role of low-input agriculture, the potentials of biotechnology, the effect of global economic forces on domestic farm decisions, and various policy options for protecting the environment A summary of the panel discussion would have made the proceedings more useful.

The book could help both economists and noneconomists who want to review some of the environmental and policy issues facing agriculture However, they will need to search elsewhere for a detailed evaluation of specific problems and policies

More P's and Q's

quotas and tariffs Until the mid-1960s, it was commonly argued that quotas and tariffs were equivalent protective devices in terms of their effects on the volume of imports, domestic price, domestic output, and domestic consumption Yet, at times they have been viewed as non-equivalent, as for instance revealed by the relative lenience of GATT rules toward tariffs vis-à-vis quotas.

Bhagwati (1965) initiated the discussion on the comparative properties of tariffs and quotas and showed that the equivalence result is restricted to cases that are characterized by competitive market structures In the context of a partial equilibrium model, he demonstrated that the presence of monopoly power in production and/or in quota holdings would lead to a breakdown of the equivalence proposition Since then, the relationship between quotas and tariffs has been examined within the general equilibrium framework and the non-equivalence result has been demonstrated under a variety of conditions, such as uncertainty and retaliation

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The New Palgrave, Vol IV, p 32

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