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**Review of *Economic Models of Agricultural Land Conservation
and Environmental Improvement* by Earl O. Heady and Gary F.
Vocke**

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Economic Models of Agricultural Land Conservation and Environmental Improvement. Earl O. Heady and Gary F. Vocke, eds. Ames, IA: Iowa State University Press, 1992. 275 pp. Bibliographical references. \$44.95 cloth.

American agriculture faces many difficult and often conflicting challenges. It is expected to satisfy growing demands for agricultural commodities both at home and abroad at reasonable prices to consumers without impairing the productivity of the nation's cropland, exceeding the sustained yield of the country's water resources, or degrading the quality of the environment.

There is ample evidence that farmers have not fully achieved these goals. But can they? If not, are there policies that would still create an improvement in the status quo? The Center for Agricultural and Rural Development (CARD) at Iowa State University has been at the forefront of the effort to answer these questions. This book is a carefully integrated collection of studies that illustrate CARD's accomplishments to date.

The studies described were done over about a 15-year period, beginning in the early 1970s. Neither the problems addressed nor the models used to analyze them, however, are out-dated. In fact, this volume should be on the reading list of policy analysts struggling today with the conflicts between production, conservation, environmental quality, and regional equity.

The analytical core of the book is a series of formal quantitative models. The first eight chapters are based on inter-regional linear programming (fixed-demand) models. The ninth and tenth chapters rely on quadratic and separable programming models—two different means of incorporating demand-price relationships. The eleventh chapter combines mathematical programming and econometric simulation. The models are explained in enough detail to satisfy the appetite of the specialist with an interest in the structure of the models

used in CARD's work. Non-mathematicians can follow much of this discussion, but those preferring not to can still gain a good understanding of CARD's work by reading each chapter's description of the problems addressed and results of the modeling effort. The book's introductory essay by Heady and Vocke provides an excellent orientation to interregional programming models for the uninitiated. The specialist is aided in working through the models by relatively consistent notation.

As a general rule, this book is user-friendly to a wide variety of readers, ranging from mathematical programmers to economists with an interest primarily in the policy implications of CARD's work. It is not designed to teach the reader how to do mathematical programming, but rather to illustrate how useful it can be in analyzing the impacts of policies aimed at conserving soil and water resources and reducing the environmental pollution associated with production agriculture. The authors clearly achieve this purpose. **Kent W. Olson**, *Department of Economics, Oklahoma State University*.