

*Impacts of Technology on U.S. Cropland  
and Rangeland Productivity*

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**Impacts of Technology  
on U.S. Cropland and  
Rangeland Productivity**



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# Foreword

This Nation's impressive agricultural success is the product of many factors: abundant resources of land and water, a favorable climate, and a history of resourceful farmers and technological innovation. We meet not only our own needs but supply a substantial portion of the agricultural products used elsewhere in the world. As demand increases, so must agricultural productivity. Part of the necessary growth may come from farming additional acreage. But most of the increase will depend on intensifying production with improved agricultural technologies. The question is, however, whether farmland and rangeland resources can sustain such intensive use.

Land is a renewable resource, though one that is highly susceptible to degradation by erosion, salinization, compaction, ground water depletion, and other processes. When such processes are not adequately managed, land productivity can be mined like a nonrenewable resource. But this need not occur. For most agricultural land, various conservation options are available. Traditionally, however, farmers and ranchers have viewed many of the conservation technologies as uneconomical. Must conservation and production always be opposed, or can technology be used to help meet both goals?

This report describes the major processes degrading land productivity, assesses whether productivity is sustainable using current agricultural technologies, reviews a range of new technologies with potentials to maintain productivity and profitability simultaneously, and presents a series of options for congressional consideration. The study was requested by the Senate Committee on Environment and Public Works and endorsed by the House Agriculture Committee, the Senate Appropriations Committee, and the Subcommittee on Parks, Recreation, and Natural Resources of the Senate Committee on Energy and Natural Resources.

The Office of Technology Assessment greatly appreciates the contributions of the advisory panel assembled for this study, the authors of the technical papers, and the many other advisors and reviewers who assisted us, including farmers, ranchers, agricultural scientists in industries and universities, and experts in other Government agencies. Their guidance and comments helped develop a comprehensive report. As with all OTA studies, however, the content of the report is the sole responsibility of the Office.

*Director*



# Impacts of Technology on U.S. Cropland and Rangeland Productivity Advisory Panel

David Pimentel, *Chairman*  
Department of Entomology, Cornell University

Delmar Akerlund  
Akerlund Farm Biological Enterprises  
Valley, Nebr.

Steve Brunson  
National Association of Conservation Districts

William Dietrich  
Green Giant Co.

James V. Drew  
School of Agriculture and Land Resources  
Management and Agricultural Experiment  
Station  
University of Alaska

George R. Hawkes  
Product Environmental Affairs  
Ortho-Chevron Chemical Co.

Earl O. Heady  
Department of Economics  
Iowa State University

John H. Herman  
Attorney at Law  
Dayton, Herman, Graham & Getts

Maureen K. Hinkle  
National Audubon Society

William H. Hinton  
Farmer  
Fleetwood, Pa.

Garry D. McKenzie  
Division of Polar Programs  
National Science Foundation

William R. Meiners  
Resource Planning and Management  
Associates, Inc.  
Meridian, Idaho

John Moland, Jr.  
Center for Social Research  
Southern University

Richard E. Rominger  
Department of Food and Agriculture  
State of California

Edwin L. Schmidt  
Department of Soil Science  
University of Minnesota

F. C. Stickler  
Product and Market Planning  
Deere & Co.

Glover B. Triplett, Jr.  
Department of Agronomy  
Ohio Agricultural Research and  
Development Center

Ralph Wong  
Rancher  
Marana, Ariz.

# OTA Land Productivity Project Staff

Joyce C. Lashof\* and H. David Banta, \*\* *Assistant Director, OTA  
Health and Life Sciences Division*

Walter E. Parham, *Program Manager  
Food and Renewable Resources Program*

Bruce A. Ross-Sheriff, *Project Director*

Chris Elfring, *Analyst and Editor*

Barbara Lausche, *Senior Analyst*

Jessica Marshall, *Intern~*

Monica Roll, *Intern*

Elizabeth A. J. Williams, *Senior Analyst*

## Administrative Staff

Phyllis Balan, *Administrative Assistant*

Marilyn Cassady    Constance Clem    Elizabeth Galloway

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