

CONTENTS

Features

311

Viewpoint: The inviolate ocean

Charles Osterberg critiques current policy on hazardous waste disposal

312

Soil conservation policy: Local action and federal alternatives

Richard Barrows and Carol Olson examine the experience and implications of a conservation district's regulatory approach to soil conservation

317

Private property and soil loss regulations

James L. Arts reviews the legal basis for regulatory soil conservation programs

320

New roots for American agriculture

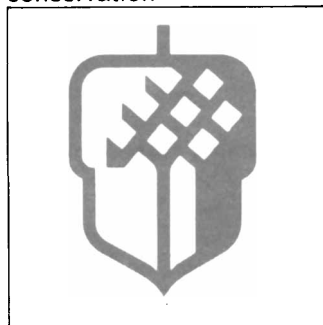
Wes Jackson and Marty Bender propose an approach to soil conservation that would change the face of American agriculture



325

The Iowa Natural Heritage Foundation: "For those who follow"

An interview with the chairman of a new organization that involves the private sector in land conservation



328

Environmental education: The Pontotoc experience

F. Dwain Phillips outlines the vital features of a conservation education success story in Oklahoma

330

Commentary: RCA and the art of the possible

Kenneth A. Cook analyzes the key elements of the federal government's proposed soil conservation program

Departments

310

Pen points

334

In the news

338

Upcoming

339

Books, etc.

361

Index

Research reports

341

Measuring crop residue cover

J. M. Laflen, M. Amemiya, and E. A. Hintz

344

The Michigan Farmland Preservation Program: An evaluation

Philip D. Gardner and Donald N. Frazier

347

Surface mining and reclamation: Initial changes in soil character

Sam J. Indorante, Ivan J. Jansen, and Charles W. Boast

351

Calculating indices of land suitability for agricultural crops: An interactive numerical technique

S. O. Lok and M. Phipps

355

Conversion of the universal soil loss equation to SI metric units

G. R. Foster, D. K. McCool, K. G. Renard, and W. C. Moldenhauer

360

Volume estimates of coarse fragments in soils: A combination of visual and weighing procedures

E. B. Alexander

Cover

Sunset over an Iowa marsh, the kind of scene that a private conservation program in that state would like to preserve for future generations. See page 325. Photo by Carl Kurtz.

The Soil Conservation Society of America is dedicated to promoting the science and art of good land use, with emphasis on conservation of soil, water, air, and related natural resources, including all forms of beneficial plant and animal life. To this end, SCSA seeks through the *Journal of Soil and Water Conservation* and other programs to educate people so that mankind can use and enjoy these natural resources forever.

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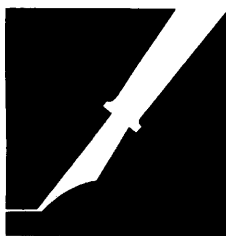
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PEN POINTS

More on organic farming

Ken Cook's article, "Horn of Plenty," in the July-August issue [pp. 216-219] does an excellent job of both reporting the various points of view that were present at the Cornucopia Symposium and capturing the essential flavor of the issues raised there. I was one of the participants, speaking on the subject of agricultural lands and conservation, which was an important part of their concern.

But more important is the broad-based concern for the long-term survival of U.S. agriculture. It is no longer sufficient to dismiss ideas like crop rotations, green manures and, yes, even "organic farming" as old-fashioned or unscientific. The rising costs of maintaining a petroleum-based agriculture and the continued uncertainty on the price side make all farmers highly interested in ways to cut costs, maintain soil quality, and still, hopefully, turn a profit.

The debate between the "pure organic farmer" and the "chemical farmer" won't do either any good if it starts from the polar viewpoints. If, however, it seeks a middle ground that begins with the concerns for soil conservation and maintaining the long-term productivity of the land, the two viewpoints find they have much in common. From that, it becomes increasingly possible to search for methods that incorporate improved soil management into modern farming practice. Soil conservationists might be surprised to find how much the views about proper soil management expressed by the organic farmers at the Cornucopia Symposium resemble the views of the better conservation farmers with whom they work.

Neil Sampson
National Association
of Conservation Districts
Washington, D.C.

BMPs for California forests

The article in the July-August 1981 issue by Robert N. Coats and Taylor O. Miller ["Developing Best Management Practices for California Forests"] provides a useful overview of a problem that is of particular concern in climatic

and geomorphic settings such as California. It is interesting to note that forest harvesting practices described by the authors are basically clearcut felling; I would be interested to learn whether this is the only approach to forest harvesting that is adopted.

In Britain there has been an interesting and apparently successful experiment using "a mixed-species, uneven-aged selection forestry system, based on a geometrical pattern." The grid system employed allows a maintained cover on at least eight-ninths of the grid system at any time. The experimental area in Devon (southwest England) has been operating for 20 years; it is described in "An Experiment in Sustainable Forestry" by Rt. Hon. The Earl of Bradford—*Ecologist* 10(5): 165-166.

Although the system does have some problems, for example, it requires highly skilled management, it does have significant benefits in terms of controlling wind and water erosion and in maintaining a more stable water balance and hydrologic response. It also provides a sustained wildlife habitat. I wonder what the potential is for an approach of this type to the situation that is typified by the example of California?

John A. Kay
Grange-over-Sands,
United Kingdom

Metric mania

While reviewing the literature on soil erosion tolerance levels, I was driven into a state of mental despair which I can now blame on the obvious difficulties

Conservationists' "Pen Points" is a forum for comment on previously published material, land and water management controversies, and SCSA affairs. The JSWC invites readers to express their views on such items in a letter to the editor. Letters are judged on clarity of expression and pertinence. They should be brief. Long letters may be shortened.

Editor.

Anglo-Saxons have in handling metric conversions.

Hudson (3) converts the 5 tons (short-long?) per acre maximum soil loss limit into 1.8 metric tons per hectare, while Wischmeier and Smith (5) suggest a conversion to 2.23 metric tons per hectare by giving a wrong conversion factor. Curiously, Hudson, in his appendix, gives the correct conversion factor: 1 metric ton per hectare = 0.446 ton (short) per acre. From the latter, it follows that 5 tons (short) per acre = 11.21 metric tons per hectare.

This result can be double-checked by following Hudson's millimetric reasoning. If 0.00083 meter of topsoil is naturally created on croplands every year and this rate sets the maximum allowable soil loss, then no reasonable bulk density constant will make the following an equality: 1.8 (2.23) metric tons per hectare = 0.00083 meter \times 10,000 \times BCD.

I am almost sure that someone else has already unraveled this mess [i.e., Arnoldus (1) seems to have succeeded]. But, as I have seen its uncritical usage in the Spanish literature (2, 4), perhaps a note in your JSWC would be worthwhile.

Have fun.

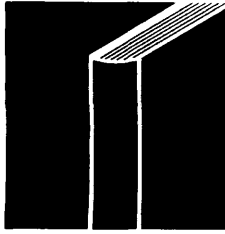
REFERENCES CITED

1. Arnoldus, H.M.J. 1977. *Predicting soil loss due to sheet and rill erosion*. In *Guidelines for Watershed Management*. Food and Agr. Org., Rome, Italy. 293 pp.
2. C.P. 1977. *Manual de conservación del suelo y del agua*. Colegio de Postgraduados, Chapingo, Méx. 584 pp.
3. Hudson, N. 1971. *Soil conservation*. B.T. Batsford Ltd., London, Eng. 320 pp.
4. Torres Rufz, Edmundo. 1981. *Manual de conservación de suelos agrícolas*. Ed. Diana, Méx. 164 pp.
5. Wischmeier, W. H., and D. D. Smith. 1978. *Predicting rainfall erosion losses—a guide to conservation planning*. Agr. Handbook No. 537. U.S. Dept. of Agriculture, Washington, D.C.

Luis Sancholuz
National Institute of
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Xalapa, Veracruz, Mexico

Fun, yes, we found it so in editing this issue's article on the universal soil loss equation (p. 355) and in compiling the conversion table on the inside of the back cover. We hope these help.

Editor



BOOKS, ETC.

The Farm and the City—Rivals or Allies. Edited by Archibald M. Woodruff. 184 pp., illus., tpls., index, 1980. Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632. \$5.95.

The papers contained in this book were presented at an April 1980 conference on farmland conversion sponsored by the American Assembly of Columbia University. Various aspects of population redistribution, farmland conversion, and potential policies to deal with these issues are discussed. The contributors, who represent diverse perspectives, include Archibald M. Woodruff, Brian J. L. Berry, Robert C. Weaver, Charles R. Fink, James G. Horsfall, Robert G. Healy, Frederick E. Smith, C. Lowell Harriss, and Mark B. Lapping.

The book's purpose, according to Woodruff, is to clarify serious questions, not to provide answers to land use issues. A summary of the questions might be as follows: How persuasive is the case that farmland should be preserved for farming? And if a decision is made to preserve farmland, what is the best way to do it?

Most of the papers depict suburban sprawl as the chief villain in the farmland conversion process, as a force that encroaches upon farmland and drains cities of their capital and human resources. Most of the authors view population redistribution as a present or potential threat to agriculture's production base. Several predict a severe crisis in food production unless government becomes more active in protecting farmland.

There are many excellent chapters in the book. Readers will find Berry's discussion of the urban problem instructive. Harriss' chapter on the free market allocation of land resources is incisive. In his evenhanded chapter dealing with city land and farmland, Woodruff points out that the forces that shape cities and their suburban areas are influenced by population distribution and by such economic and policy aspects as the mortgage markets, transportation systems, and federal income tax provisions. He suggests that there is highly productive farming and gardening in the urban fringe and that the loss of rough land which goes into parks or conservation use is not serious from the perspective of agricultural production.

The book may disappoint many readers. Those believing that all farmland should be preserved at any cost will not find such a view strongly supported. Those who

don't think there is a problem will not be reinforced either. The uncommitted reader will be disappointed that little progress has been made in clarifying the questions surrounding this set of issues. Nevertheless, I suspect the problem lies not with the authors but with the absence of a professionally agreed upon agricultural land data base. The difficulties with the land data base have been explored in the *JSWC*, especially in connection with the National Agricultural Land Study (Cook, Kenneth A. "The National Agricultural Land Study Goes Out with a Bang," March-April 1981, pp. 91-93). Another problem of their book is in defining concepts such as prime agricultural land, or urbanization.

In summary, the book contains useful ideas and information. A number of such efforts, however, may be necessary to clarify questions, data, and concepts for the issues surrounding farmland preservation.—*R. J. HILDRETH, Farm Foundation, Oak Brook, Illinois 60521.*

Soil Science Simplified. Milo I. Harpstead and Francis D. Hole. 121 pp., illus., refs. 1980. Iowa State University Press, Ames, 50011. \$8.25

Professors Harpstead and Hole are well-known, experienced college teachers of soil science as well as researchers in the field of soil science in general and soil genesis and morphology specifically. Their purpose in writing this book is stated in the preface as follows:

"This book is directed toward those who desire a simplified and illustrated summary of basic information about soil science but are not necessarily interested in technical aspects of the subject. It is a guide to the study of soils by both the layperson and the natural scientist. It is suitable for incorporation in high school earth science curricula, and university students in many fields of natural science will find it valuable for a better understanding of soil science."

The authors accomplished their purpose remarkably well. The book is filled with meaningful illustrations and easy-to-understand discussions of soil physical and chemical properties, soil water and temperature relationships, soil erosion, plant nutrition, engineering uses of soil, and soil organisms. The last two chapters discuss soil classification and soil landscapes.

This book does an excellent job of pro-

viding basic soil science information in an easily read and understandable form for persons who are not interested in the very technical aspects of the subject.—*GERALD J. POST, Midwest Technical Service Center, Soil Conservation Service, Lincoln, Nebraska 68508.*

General

Countryside Conservation. By Bryan Green. 249 pp., illus., bibliog., tpls., index, 1981. Allen & Unwin, Inc., Winchester, Mass. 01890. \$35.00, cloth; \$17.95, paper.

Soil and Water Conservation Engineering (third edition). By Glenn O. Schwab, Richard K. Frevert, Talcott W. Edminster, and Kenneth K. Barnes. 525 pp., illus., apps., index, 1981. John Wiley & Sons, Somerset, N.J. 08873. \$32.95.

Forests

Harvesting and Utilization Opportunities for Forest Residues in the Northern Rocky Mountains. *Symposium Proceedings, November 28-30, 1979, Missoula, Montana.* 294 pp., illus., 1981. Forest Service General Tech. Rpt. INT-110. Intermountain Forest and Range Experiment Station, Ogden, Utah 84401.

Proceedings of Intermountain Nurseryman's Association and Western Forest Nursery Association, Combined Meeting, August 12-14, 1980, Boise, Idaho. 148 pp., illus., 1981. Forest Service General Tech. Rpt. INT-109. Intermountain Forest and Range Experiment Station, Ogden, Utah 84401.

Predicting Postfire Plant Succession for Fire Management Planning. By Stephen R. Kessell and William C. Fischer. 19 pp., illus., refs., app., 1981. Forest Service General Tech. Rpt. INT-94. Intermountain Forest and Range Experiment Station, Ogden, Utah 84401.

Better Data Needed to Determine the Extent to Which Herbicides Should be Used on Forest Lands. 65 pp., illus., apps., 1981. CED-81-46. U.S. General Accounting Office, Gaithersburg, Md. 20760.

Timber Supply from Private Nonindustrial Forests. By Clark Shepard Binkley. Bull. 92. 97 pp., illus., bibliog., apps., tpls., 1981. Publications, Yale Forestry Library, New Haven, Conn. 06511. \$5.95.

Tropical Forests: Utilization and Conservation. Ecological, Sociopolitical and Economic Problems and Potentials. Proceedings of an International Symposium held at Yale University, School of Forestry and Environmental Studies, New Haven, Conn., April 15-16, 1980. Edited by Francois Mergen. 199 pp., refs., 1981. Publications, Yale Forestry Library, New Haven, Conn. 06511. \$6.95.

Nonindustrial Private Forest Ownership Studies: A Bibliography. By William B. Kurtz and Carmen K. Crouse. 14 pp., bibliog., 1981. No. 60. Council of Planning Librarians, Chicago, Ill. 60637. \$5.00.

Atlas of United States Trees, Volume 6. Supplement. By Elbert L. Little, Jr. 31 pp., refs., index, maps, 1981. U.S. Government Printing Office, Washington, D.C. 20402.

Handbook of Weed and Insect Control Chemicals for Forest Resource Managers. By Michael Newton and Fred B. Knight. 213 pp., illus., app., gloss., index, 1981. Timber Press, Beaverton, Ore. 97005. \$17.95.

Engineering Systems for Forest Regeneration. Proceedings. 384 pp., 1981. American Society of Agricultural Engineers, St. Joseph, Mich. 49085. \$19.50, ASAE members; \$24.50, non-members.

Grasslands

U.S.-Canadian Range Management, 1935-1977: A Selected Bibliography on Ranges, Pastures, Wildlife, Livestock, and Ranching. Edited by John F. Vallentine. 368 pp., 1981. Oryx Press, Phoenix, Ariz. 85018. \$67.50, plus \$1.25 for postage and handling.

Soils

A Computerized System for Estimating and Displaying Shortrun Costs of Soil Conservation Practices. By Daryll D. Raitt. 23 pp., bibliog., app., 1981. Technical Bulletin No. 1659. U.S. Department of Agriculture, Washington, D.C. 20402.

Water

Satellite Hydrology. Edited by M. Deutsch, D. R. Wiesnet, and A. Rango. Proceedings, Fifth William T. Pecora Memorial Symposium on Remote Sensing. Illus., 1981. American Water Resources Association, Minneapolis, Minn. 55404. \$85.00.

Arizona Water Symposium 22nd Annual Proceedings, Phoenix, Arizona, September 27, 1978. 34 pp., Report no. 11. Arizona Water Commission, Phoenix, 85003.

Congressional Action Needed to Provide a Better Focus on Water-Related Research Activities. 79 pp., apps., 1981. CED-81-87. U.S. General Accounting

Office, Gaithersburg, Md. 20760.

Water Research Topics: Volume 1. Edited by I. M. Lamont. 263 pp., illus., index, 1981. John Wiley & Sons, Somerset, N.J. 08873. \$64.95.

Fish and Wildlife

National Direction Required for Effective Management of America's Fish and Wildlife. 93 pp., app., 1981. CED-81-107. U.S. General Accounting Office, Gaithersburg, Md. 20760.

Measuring Public Attitudes Toward Natural Resource Issues: Coyote Control. By Louise M. Arthur. 67 pp., refs., tpls., apps., 1981. Technical Bulletin No. 1657. Economic Research Service, U.S. Department of Agriculture, Washington, D.C. 20402.

Agriculture

Selected Bibliography on Southern Range Management, 1973-1978. By H. A. Pearson, R. D. Child, E. K. Byington, H. E. Grelen, and C. E. Lewis. 61 pp., indexes, 1980. Forest Service General Tech. Rpt. SO-31. Southern Forest Experiment Station, New Orleans, La. 70153.

The Department of Agriculture Can Minimize the Risk of Potential Crop Failures. 35 pp., apps., 1981. CED-81-75. U.S. General Accounting Office, Gaithersburg, Md. 20760.

Rainfall Collection for Agriculture in Arid and Semiarid Regions. Proceedings of a Workshop hosted by the University of Arizona, USA and the Chapingo Postgraduate College, Mexico. Edited by C. F. Hutchinson, G. R. Dutt, and M. Anaya Garduno. 97 pp., illus., 1981. Commonwealth Agricultural Bureaux, United Kingdom. \$6.75, USA and Canada, 10% extra.

Are Pesticides Really Necessary? By Keith C. Barrons. 245 pp., index, 1981. Regnery Gateway, Inc., Chicago, Ill. 60610. \$6.95.

Automation of Surface Irrigation: 15 Years of USDA Research and Development at Fort Collins, Colorado. By H. R. Haise, E. G. Kruse, M. L. Payne, and H. R. Duke. 60 pp., bibliog., app., 1981. Production Research Report No. 179. U.S. Department of Agriculture, Washington, D.C. 20250.

Improving Productivity on Forests and Rangelands, 1980 Research Accomplishments. 136 pp., illus., 1981. General Technical Report WO-30. Forest Service, U.S. Department of Agriculture, Washington, D.C. 20250.

Survey of Irrigation in Eight Asian Nations: India, Pakistan, Indonesia, Thailand, Bangladesh, South Korea, Philippines, and Sri Lanka. By William R. Gasser. 114 pp., illus., refs., tpls., 1981. Foreign Agricultural Economic Report No. 165. U.S. Department of Agriculture, Washington, D.C. 20250.

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