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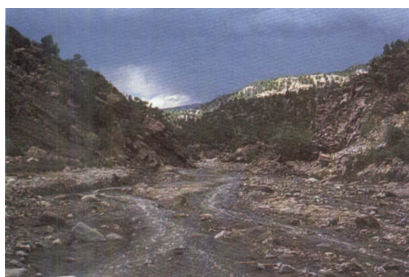
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Monarch butterflies begin their Southern migration in the fall.

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B O O K S , E T C .

Vetiver Grass: A Thin Green Line against Erosion.

1993. Edited by Noel Vietmeyer, National Academy Press, 171 pp. The National Research Council, Washington, D.C.

This book introduces us to both a unique grass and to concepts of erosion control which can utilize this and similar stiff-stemmed grasses. The authors draw on worldwide experience with this grass, which secretes an oil from its roots. The oil has a pleasant odor and has been esteemed through many centuries as a fragrance. The British were introduced to the plant in India and distributed it widely over the world in their plant introduction stations in the eighteenth and nineteenth centuries.

Vetiver is a warm season grass and grows rapidly during June through August, generally reaching heights of two meters or more. When slips of the grass are planted in a row with 15 to 20 cm spacing, they can grow into a strong continuous hedge within two years. These hedges are sufficiently strong to remain erect even when ponded water on the upper side of the hedge is 30 cm or more in depth.

When such hedges are planted across hill slopes, they retard runoff waters carrying sediment and crop residues. The retardation increases most rapidly in the section of the hedge where flow is most concentrated and lodges the most residue in that section of the hedge. Consequently, concentrated flows are dispersed.

Ponding water on the uphill sides of these hedges deposits most of the sediment load, reduces peak runoff rates, and keeps water on the hillsides longer, resulting in larger portions of precipitation entering the soil and reducing total runoff.

According to the authors,

the strength of vetiver hedges is when they are planted across concentrated flow areas such as ephemeral gullies. The book cites studies in Southern Louisiana where more than 40 cm of sediment was deposited behind a vetiver hedge in an ephemeral gully during the first year. Accumulation of this sediment on top of the scoured bed, favored establishment of native vegetation, which further retarded the water flow and deposited more of the sediment carried by flood waters.

Other positive characteristics of vetiver grass illustrated in the book include its deep and vertical rooting habit. This allows the vetiver hedges to survive droughts and allows it to take a large part of their water from deeper layers in the soil where it may not be competing with adjacent crops. The serrated edges of mature vetiver leaves cause it to be somewhat unpalatable to livestock. In grazing situations this favors persistence of the hedges. However, the book also reports that if clippings are taken every few weeks during the growing season, animals will eat them.

The long-term result of these grass hedges on topography are illustrated in the book. Benched terraces with steep grass protected slopes ranging from two to eight feet in height, interspersed with cropped areas of reduced slope have developed within one to three decades. Control of erosion and increased water use efficiency are attested to by their users.

Because of the limited cold tolerance of vetiver (it is killed by temperatures below 12°C), its use is generally restricted to climatic zones 8 and 9 in the southern U.S. Consequently, the authors give an extensive list of other grasses which have somewhat similar physical characteristics and have sufficient cold toler-

ance to be grown in other parts of the U.S. as hedges for erosion control.

The book is clearly written and readily available since agencies interested in erosion control and environmental improvement funded its publication. Time spent reading it will be a good investment for persons interested in the plant, the concept of grass hedges for erosion control, or in low cost control of erosion on the land.—*W.D. Kemper, USDA-ARS-NPS, Beltsville, MD.*

General

Tales of the Earth—Paroxysms and Perturbations of the Blue Planet. By Charles Officer and Jake Page. 226 pp., 1993. Oxford University Press, New York, NY. \$24.00 hardbound.

Landscape Ecology and GIS. Edited by Roy Haines-Young, David R. Green, and Stephen H. Cousins. 288 pp., 1993. Taylor and Francis Publishers, Bristol, PA.

Fate and Prediction of Environmental Chemicals in Soils, Plants, and Aquatic Systems. Edited by Mohammed Mansour. 304 pp., 1993. Lewis Publishers, Boca Raton, FL 33431. \$69.95.

Financial Tools for Scientific Managers. By James Farley. 400 pp., 1993. Lewis Publishers, Boca Raton, FL 33431. \$39.95.

Ninth Report to Congress on the Administration of the Wild Free-Roaming Horse and Burro Act. 70 pp., 1993. U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.

Applied Factor Analysis in the Natural Science. By Richard Reymont and K.G. Joreskog. 371 pp., 1993. Cambridge University Press, New York, NY. \$79.95 hardbound.

Proceedings of the U.S. Geological Survey Global Change Research Forum, Herndon, VA, March 18-20, 1991. Edited by John A. Kelmelis and Mitchell Snow. 121 pp., 1993. U.S. Department of the Interior, Washington, D.C. Free.

Biodiversity Prospecting: Using Genetic Resources for Sustainable Development. 341 pp., 1993. World Resources Institute, Washington, D.C. \$29.95 paperback.

Managing Global Genetic Resource: Livestock—A Report from the Board on Agriculture, National Research Council, National Academy of Science. 288 pp., 1993. National Research Council, Washington, D.C. \$34.95, plus \$4.00 shipping and handling.

Molecular Environmental Biology. Edited by Semour J. Garte. 400 pp., 1993. Lewis Publishers, Boca Raton, FL 33431. \$69.95.

Agriculture

Farmland Erosion in Temperate Plains Environment and Hills. By S. Wicherek. 584 pp., 1993. Elsevier Publishers, Amsterdam. \$242.75 hardbound.

Pesticide Interactions in Crop Production: Beneficial and Deleterious Effects. By Jack Altman. 592 pp., 1993. CRC Press, Boca Raton, FL 33431. \$179.95.

Genes, Crops and the Environment. By John Holden, James Peacock, and Trevor Williams. 160 pp., 1993. Cambridge University Press, New York, NY 10011-4211. \$54.95.

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Soybean Diseases: A Reference Source for Seed Technologists. By Denis C. McGee. 151 pp., 1993. American Phytopathological Society, St. Paul, MN 55121. \$28.00 paperback.

Drought Assessment, Management, and Planning: Theory and Case Studies. Edited by Donald A. Wilhite. 320 pp., 1993. Kluwer Academic Publishers, Dordrecht, The Netherlands.

Plant Pathogenesis and Disease Control. By Hachiro Oku. 208 pp., 1993. Lewis Publishers, Boca Raton, FL 33431. \$69.95.

Plant Protein Engineering. Edited by P.R. Shewry and S. Gutteridge. 362 pp., 1993. Cambridge University Press, New York, NY 10011-4211. \$99.95.

Ecology

Dictionary of Ecology and Environmental Science. Henry W. Art, General Editor. 640 pp., 1993. Henry Hold and Company, Inc., New York, NY 10011. \$60.00

Beacham's Guide to Environmental Issues and Sources—5 volumes. 3,350 pp., 1993. Beacham Publishing, Inc. Washington, D.C. \$240.00 hardbound.

Choosing a Sustainable Future—The Report of the National Commission on the Environment. Prepared by the National Commission on the Environment. 200 pp., 1993. Island Press, Washington, D.C. 20009. \$25.00, hardcover, plus \$4.25 shipping and handling.

Environmental Strategies for Industry. Edited by Kurt Fischer and Johan Schot. 300 pp., 1993. Island Press, Washington, D.C. \$48.00 hardcover, \$24.95, paperback, plus \$4.25 shipping and handling.

Land Conservation Through Public/Private Partnerships. Edited by Eve Endicott. 320 pp., 1993. Island Press, Washington, D.C. \$45.00 hardcover, \$22.95 paperback, plus \$4.25 shipping and handling.

Fish and Wildlife

Distribution and Abundance of Predators that Affect Duck Production—Prairie Pot-hole Region. By Alan B. Sargeant, Raymond J. Greenwood, Marsha A. Sovada, and Terry L. Shaffer. 96 pp., 1993. U.S. Department of the Interior Fish and Wildlife Service Resource Publication 194, Washington, D.C.

Forestry

Directory of Selected Tropical Forestry Journals and Newsletters. By Christine Haugen, Patrick B. Durst, and Elisabeth Freed. 127 pp., 1993. The Forestry Support Program, Washington, D.C.

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Advances in Pollen Management. Edited by D. L. Bramlett, G. R. Askew, T.D. Blush, F. E. Bridgwater and J. B. Jett. 101 pp., 1993. USDA Forest Service, Washington, D.C.

Law, Legislation, Politics

Civic Environmentalism: Alternatives to Regulation in States and Communities.

By Dewitt John. 1993. Congressional Quarterly Washington, D.C. 20037. \$39.95 hardbound, \$21.95 paperback.

Resource Politics—Freshwater and Regional Relations. Edited by Caroline Thomas and Darryl Howlett. 210 pp. 1993. Open University Press, Buckingham, PA.

Directory of Legislative Leaders 1993. 112 pp., 1993. National Conference of State Legislatures, Denver, CO 80202. \$15.00.

Water Resources

Using Water Effectively: Technological Options. By Mei Xie, Ulrich Kuffner, and Guy Le Moigne. 53 pp., 1993. The International Bank for Reconstruction and Development/The World Bank, Washington, D.C. \$6.95 paperback.

Groundwater Irrigation and the Rural Poor: Options for Development in the Gangetic Basin. Edited by Friedrich Kahnert and Gilbert Levine. 223 pp., 1993. The International Bank for Reconstruction and Development/The World Bank, Washington, D.C. \$21.95 paperback.

Ogallala Water for a Dry Land. By John Opie. 412 pp., 1993. University of Nebraska Press, Lincoln, NE 68588-0520. \$35.00 hardbound.

Hydrogeological Processes in Karst Terranes. Edited by Gultekin Gunay, A. Ivan Johnson, and William Back. 207 pp., 1993. IAHS Press, Wallingford, Oxfordshire, UK. \$60.00.

Application of Geographic Information Systems in Hydrology and Water Resources Management. Edited by K. Kovar and H. P. Nachtnebel. 694 pp., 1993. IAHS Press, Wallingford, Oxfordshire, UK. \$80.00.

Water Resources Education: A

Lifetime of Learning. Edited by N. Earl Spangenberg. 716 pp, 1993. American Water Resources Association, Bethesda, MD 20814-2192. \$55.00, \$44.00 AWRA members, plus \$8.00 shipping and handling.

Changing Roles in Water Resources Management and Policy. Edited by Donald F. Potts. 716 pp., 1993. American Water Resources Association, Bethesda, MD 20814-2192. \$55.00, \$44.00 AWRA members, plus \$8.00 shipping and handling.

Water Resources Administration in the United States Policy, Practice and Emerging Issues. Edited by Martin Reuss. 314 pp., 1993. American Water Resources Association, Bethesda, MD 20814-2192. \$40.00, \$32.00 AWRA members, plus \$7.00 shipping and handling.

Geographic Information Systems and Water Resources. Edited by John M. Harlin and Kenneth J. Lanfear. 640 pp., 1993. American Water Resources Association, Bethesda, MD 20814-2192. \$95.00, \$76.00 AWRA member, plus \$8.00 shipping and handling.

Groundwater Handbook. By Keith E. Anderson. 394 pp., 1993. National Groundwater Association, Dublin, OH \$25.00.

Water's Way: Life Along The Chesapeake. Essays by Tom Horton and photography by David W. Harp. 132 pp., 1993. Elliot and Clark Publishing, Washington, D.C. \$36.00.

Waste Management

Science and Engineering of Composting: Design, Environmental, Microbiological and Utilization Aspects. Edited by H.A.J. Hoitink and H.A. Keener. 728 pp., 1993. Renaissance Publications, Worthington, OH 43085. \$125.00, plus shipping and handling.