

Woody Plants and Woody Plant Management: Ecology, Safety, and Environmental Impact

By Rodney W. Bovey. 2001. Published by Marcel Dekker, Inc., 270 Madison Ave, New York, NY 10016 (www.dekker.com). viii + 564 p., illus. \$195. ISBN 0-8247-0438-X.

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Wise and effective woody plant management is an increasing necessity for many land uses and conservation practices, especially on forests and rangelands where native or exotic plants are affecting productivity, access, or critical habitat. Tools and approaches for managing woody plants have been under concerted development for the past 50 years, integrating mechanical, herbicidal, manual, cultural, and biocontrol techniques. This period was fraught with controversy as herbicide use increased with its consequences persistently questioned. Nevertheless, eager adopters of new tools and strategies have been managers for forestry, range, right-of-ways, wildlife, recreation, industrial sites, and more recently natural areas and preserves. Drawn to the generic title of this book, all these users would have great expectations for information to fit their many needs.

During much of this period, Rodney W. Bovey has been rigorously developing tools, strategies, and research protocols for rangeland management in Texas and the subregion—especially effective and safe herbicide uses. He is a highly recognized agronomist, weed scientist, and biochemist and was a scientific expert involved in the Agent Orange controversy. In 1980, he co-authored the book, *The Science of 2,4,5-T and Associated Phenoxy Herbicides*. He, like myself, has been a federal government researcher (USDA Agricultural Research Service), located on an agricultural university campus (Texas A&M University), for most of his career—investigating similar subjects from different perspectives. This long-term purview, combined with his specialties and experience, has yielded rarely matched knowledge on woody plant management, certainly from the range perspective.

In this 564-page sole-authored text, Dr. Bovey has compiled updated book chapters, research reports, and 1300 citations “to bring together the most significant literature and data into one reference” on “managing woody plants that may be undesirable for wildlife, livestock, or wood production.” Much of the reviewed literature comes from the *Journal of Range Management*, weed science (from books to abstracts), extension bulletins, herbicide labels, material safety data sheets, and manufacturer’s efficacy reports. The book is an extensive annotated bibliography, at times with added synthesis; an expanded extension primer on herbicides, their safe and economic use; and a treatise on the developmental history of woody herbicides, their application, and related tools. Even though abundant overall references are cited, only some of the pertinent reports from forestry research are included. There are attempts in brief sections to include

forestry perspectives, strategies, and tools for woody plant management, but they are limited in scope and detail. In contrast, Bovey’s extensive research on control of honey mesquite (*Prosopis glandulosa* Torr.) and related range species (especially using phenoxy herbicides) is most often given comprehensive coverage. The phenoxy herbicides and “older chemistry” are thoroughly reviewed, but considerably less data are presented on the currently applied forestry herbicides. To be most accurate, perhaps the title of the book should have included the phrase, “for range management and other uses.”

Bovey does a valuable service by giving structure to the developing subdiscipline of vegetation management science that deals with woody plant management (versus row-crop weed science). He does this through the construct of chapters, their subtopics, the extensive literature reviewed, and his crisp prose with all encompassing sentences (only one figure in 564 pages). The book starts with a brief biology and significance of woody plants and provides details on 28 problem species — mostly range species and not in their community context. A concise, valuable history of the tools for woody plant control follows for prescribed burning (including some forestry), biological control, mechanical, herbicides and “integrated brush management systems.” Nine fact-packed chapters then delve into woody-plant herbicide development, chemistry, application, residues and environmental impacts, toxicology and safety, activity, target plant response, nontarget impacts, and ecological impacts. Laws regulating herbicides and the registration process are thoroughly reviewed. The same 17 herbicides are detailed throughout these chapters and in 5 well-constructed synthesis tables. Synthesis outside these tables is too often spotty. A centerpiece table summarizes the herbicides’ efficacy on 370 woody plants in 33 pages, but has more “gaps” than data and is not so well constructed. Data are drawn mainly from range extension reports and herbicide manufacturer’s summaries that are known to be overly generous (none from forestry literature). Also, the lines in the facing-page format do not always align, making use difficult (readers must visually omit the top line and adjust on most right-side pages). The book closes with chapters on: economics of woody plant management *in range* (containing a more compelling introduction for the entire text); a chapter on nonchemical methods that is also totally range-related; and a unique chapter on growing woody plants for experimental purposes. An insightful final chapter summarizes and recommends future directions for research and development.

Imbedded within this text, Chapter 8 is an account of the phenoxy herbicide controversy that led to the cancellation of 2,4,5-T and silvex for use in the United States in 1985. Incidents are described, scientific reviews and investigations are cited and summarized, and an overview synthesis is given of this costly and emotional episode that brought weed science into the politically charged era of the Vietnam War. Bovey was directly involved and provides first-hand commentary and scientific documentation, and by his view, a final exoneration of these herbicides. This learned rendering provides facts for those with nagging questions, perhaps comfort for those who feel victimized, and a holistic review to temper us as we confront future dilemmas involving herbicide use in land management.

This is a must-have historical review and reference for range and weed scientists and upper-level undergraduate and graduate students in these disciplines. Be aware that the meager table of contents and index as well as 16 chapter-end reference lists do not foster ready access to sections, subtopics, and the literature wealth. Valuable for the novice manager and policy maker in many land use fields, the extension-style chapters give in-depth introduction to herbicide development and uses, precautions, risks, and effects as well as how they fit into integrated vegetation management programs—albeit range management. All in all, this is a highly commendable career-summing tome from one of our most valued land resource scientists.