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Turfgrass in a well-maintained lawn, on a sports playing field, or underfoot at a public park did not grow there by accident. A large body of science has informed its development, management, and appearance. Science has provided for turfgrasses that are tolerant of environmental stresses, diseases, and insect pests and that also have a beautiful appearance. Basic and applied research has led to scientifically sound technologies that minimize management inputs to turfgrasses, while maximizing obvious and less noticeable benefits, enabling turf to be grown in many different contexts. That science is on ready display in this excellent monograph, which greatly expands on two previous editions to provide the most comprehensive overview of turfgrass science published to date. Complete with information on the latest advances, this monograph covers numerous topics barely discussed twenty years ago when the last edition was issued and updates existing topics with the latest information. All aspects of turf are covered, from basic biology and plant breeding to applied turf management and how Extension promotes sustainable turfgrass management in an increasingly urbanized world.

This comprehensive book is an invaluable source of information for researchers, students, and practitioners, as well as an excellent aid to teaching worldwide. As this book shows, turfgrass science is alive and well, producing valuable information to make turfgrass more resilient in the face of climate change, more beautiful, and more valuable to the world. The entire turfgrass community should be proud of these accomplishments; society at large appreciates your effort.

As editors-in-chief of the Societies, we are indebted to the editors of this volume, John Stier, Brian Horgan, and Stacy Bonos for their outstanding efforts to bring this book to completion and to the authors for their synthesis of an ever-increasing body of literature. This book collectively reflects their considerable hard work and dedication to furthering the field of turfgrass. This will be the go-to turfgrass book for years to come.

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This book was produced for students, researchers, consultants, regulators, and turfgrass management professionals. Many chapters are extensive reviews of the literature and will be helpful to those seeking a comprehensive view of a subject such as turfgrass heat tolerance or management of shaded turf. Other chapters, such as “Turfgrass Extension and Outreach Programming,” summarize examples of key issues and programs, along with the need for, and outcomes of, state and federal investment in turfgrass science. Chapters were developed to serve as stand-alone entities for teaching purposes and are available electronically from the publisher. This feature may prove to be a harbinger of the publishing future: before this book’s publication, we were already receiving requests for specific chapters.

The previous two versions of this book, both titled *Turfgrass*, were published in 1969 and 1992. During each of the approximately 20 yr between versions, the number of turfgrass researchers and the amount of data produced increased exponentially. The depth and breadth of knowledge expanded, and new areas of research were developed. On the plant side, the advent of molecular biology gave researchers tools for understanding the genetic underpinnings of turfgrass behavior. Advancements in engineering technologies allowed researchers to more precisely, and quickly, measure such aspects of turf as soil moisture, temperature, and traction for sporting purposes. Knowledge about turf in the landscape from a social sciences perspective exploded, too, with greater awareness of the value of turf to different social factors, ranging from human behavior to direct economic activity and employment. Since 1992, the ability to share knowledge as a result of computers and the Internet has catalyzed enormous amounts of research. In the United States, the Turfgrass Information File database was transformed from a DOS-based, dial-up system accessible to only a few researchers in 1992 to a full-fledged web-based, key-word searchable database called “the best database for a subject” by a librarian at the University of Wisconsin–Madison. By the late 1990s, the Internet’s various search engines allowed people across the world immediate access to publications on turfgrass science, management, and news. By the mid-2000s, government agencies and municipalities were also readily sharing information on turf management and regulations. Bans on turf pesticides in Canada emboldened pesticide-free lawn activists in the United States, while lawn phosphorus restrictions in Minnesota initiated a chain reaction copied and expanded by such states as Wisconsin and New Jersey. Turfgrass researchers and extension (outreach) specialists are increasingly being asked to provide data to regulatory agencies on topics as varied as invasive grasses in the United States to drought and irrigation in Australia. Data sharing among researchers from a face-to-face perspective grew, too. In 1992, the International Turfgrass Research Society was the only international, formal venue for researchers to present data. During the 2000s, the International Sports Turf Conference and the European...
Turfgrass Society formed, providing additional venues for sharing data with international colleagues.

Readers of the previous monographs in the series will recognize updated chapters from previous versions, such as those on synthetic turf, shade, and the turfgrass industry. Other topics have been greatly expanded. For example, the 1992 Turfgrass monograph had three chapters on turfgrass soil, nutrients, and water; the new monograph has seven chapters on the three subjects. “Turfgrass Benefits and Issues” broadens the theme of turfgrass benefits first published by J.B Beard and R.L. Green in a 1994 Journal of Environmental Quality article. A number of new topics are being included for the first time. “Turfgrass Extension and Outreach Programming” is the first documentation of its kind devoted to turfgrass. The chapters on native grasses and genomics address research areas that were in their infancy in 1992. Chapters on irrigation technology, digital analysis, and spectral sensing document how research and technology are changing the way turf is managed. In accord with the public movement for more sustainable industries, “Sustainable Turfgrass Management in an Increasingly Urbanized World” describes strategies for reducing reliance on synthetic products for turf management while maintaining well-kept turf for pleasure, recreation, and environmental benefits.

Numerous books and other publications have been produced for students, homeowners, and other groups in the past 20 yr as society has become increasingly urbanized, and turf, primarily in the form of lawns, has garnered more public attention due to its maintenance costs and perceived environmental impacts. Our mission was to have some of the world’s best turfgrass researchers and educators summarize the state of knowledge and activities in their particular areas. The outcome of this effort was meant to accomplish a special vision: enhanced public awareness of the scientific underpinnings of turfgrass use and management, thereby allowing people to make the best possible decisions regarding turfgrass as part of the human environment.

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