

SUSTAINABLE TURF

Establishment, Maintenance, and IPM Guidelines for Turf in Atlantic Canada

First Edition, 2003



By the New Brunswick Horticultural Trades Association
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The first edition of these guidelines will be circulated for at least one year in order to gather more input, and to incorporate current research and practical experience. Comments may be forwarded to the NBHTA for consideration in future updates. The guideline, and periodic updates, will be available for download, in pdf format, on the publisher's website. It would be appreciated if credit is given to the publisher for the use of any of the content quoted or reproduced.

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Cover design by Annette Wetmore with graphics by Geoffrey Roy, symbolizing some of the concepts in sustainable turf: conserving topsoil, research, establishment, and monitoring for pest problems.

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In the final analysis, this manual is the result of the contributions from many sources. The authors have attempted to pull it together; we take full responsibility for any errors or omissions.

Jack Wetmore and Ken Browne
Fredericton NB, October 2003.

Postscript:

There were a great number of early mornings and late nights involved in getting the manual to this stage. I owe a great deal to my son Rod, who, in taking over the reins of our company, gave me time to work on the project. My wife, Margaret, also deserves a lot of credit for her patience – putting up with those odd hours without an undue amount of grumbling!

Thank you both.

Jack.

ABOUT THE AUTHORS

Jack Wetmore is the founder of Wetmore's Landscaping, Sod and Nursery, one of New Brunswick's older horticultural operations. A multi-faceted operation founded in 1973, the firm introduced a number of innovations to the NB industry including hydraulic seeding (1976) and the use of biosolids in sod production. The firm is now in second-generation management. Jack has completed numerous industry conservation studies for the New Brunswick Horticultural Trades Association in cooperation with the provincial government. Awarded the Professional Agrologist designation (one of the few non-science people to be so recognized) in 1995, Jack has also acted as a national judge in the Communities in Bloom program, and has consulted in Egypt on sod production opportunities in that country. He has written several articles and conducted a number of seminars and training sessions on industry management and environmentally friendly turf care, and has been the recipient of numerous awards for his industry involvement. Jack is currently on the board of the NBHTA, acting as the IPM projects coordinator for that association, and the Environment Committee chair for the Canadian Nursery and Landscape Association.

Ken Browne is a biologist and educator, with more than 27 years of experience in the risk management of hazardous materials for the New Brunswick Department of the Environment, including being Director of programs in pesticide management, contaminated orphan-site remediation, waste-oil recovery, and PCB storage site management. Since retiring in 1998, he has founded the private consulting company Atlantic Information Services, has become a certified auditor for the Agrichemical Warehouse Standards Association of Crop Life Canada, and is authorized to present pesticide certification trainer programs in the Atlantic Region. He has authored or co-authored numerous reports, including development of a code of good practice for the safe handling, storing, using and disposing of pesticides at federal facilities and pesticide certification training manuals for farmers, the lawn & landscape industry, and pesticide vendors in the Atlantic Region. He has also worked with the Chilean Department of Agriculture on the development of a series of education and training programs for the safe management of crop protection products and improved pesticide legislation in Chile and is working on similar programs in Paraguay and Uruguay.

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FORWORD

Lawns are wonderful creations!

Healthy lawns make a positive contribution to our environment and quality of life. Lawns around our homes and buildings fill a variety of functions and provide many benefits. These areas of lawn (called turf, or turfgrass, by lawn care professionals):

- provide cooling in urban areas,
- reduce noise and glare and keep down dust,
- improve the soil and protect groundwater,
- displace noxious plants and plants with pollens that cause allergies,
- lower fire hazards,
- control soil erosion and reduce risk of flooding,
- provide an aesthetic appearance, and
- provide a low-cost surface for sports and leisure activities.¹

An estimated 45,000 ha of general turf are maintained in the Atlantic region by either professionals or homeowners.² This is a sizeable component of horticulture, representing a large investment of labour, money, and inputs such as water, fertilizer and pesticides. A key question for everyone involved in managing this turf is: How can we provide the best results, most efficiently, while protecting the environment? In other words: *How do we grow sustainable lawns?*

Purpose of This Manual

Concern over environmental and health impacts is placing intense pressure on the turf to reduce lawn care inputs, such as pesticides, fertilizers and water. Experience has shown that we can substantially reduce these inputs, *while satisfying customer expectations*. For example, by adopting sound turf management practices and applying the principles of integrated pest management, studies have shown that pesticide use can be reduced by over 80%.³ Fertilizer use can also be significantly reduced by fertilizing according to soil tests, improving the timing of applications and switching to slow-release products. Such success is only possible, however, if sound information is made available to the industry and the public, if it is delivered effectively, and then put into practice.

This manual was developed to assist in providing this information. It incorporates the most up-to-date research and local experience on managing turf to:

- encourage healthy growth,
- protect the environment,
- conserve topsoil and water, and
- reduce the use of pesticides and fertilizers.

Construction practices for new lawns that improve long-term results and reduce the need for inputs in the future are also covered.

This manual discusses the construction and management of general-purpose lawns rather than specialty turf, such as golf greens or playing fields. It is intended to provide standardized information for the Atlantic region. This is because current recommendations on lawn care practices vary widely, even from turf professionals and government advisors. For example, a recent survey of

the New Brunswick Horticultural Trades Association found that members used a wide variety of practices in their efforts “to do the right thing”.⁴

This is neither a manual of organic lawn care practices nor a pesticide applicator-training manual. Rather, it is basic guide to sustainable management practices that will be useful for anyone caring for a lawn.

Everything we do to – and for – our lawns has an effect, positive or negative, on turf growth and on our environment. This manual is intended to show the relationship between our turf management practices, the overall health of the turf, and our surrounding environment. With such information we can make choices that are practical, economical and provide the best results, while protecting the environment. In short, this manual describes changes in our approach to total turf management, and how we can make those changes successfully.

Who is the audience?

Everyone who makes decisions about turf installation and maintenance needs to know what long-term impacts their decisions have. This manual is for those involved in any aspect of turf management. It is for all who want to ensure that their lawn care practices are effective while protecting the environment. This includes homeowners, turf industry professionals and suppliers, architects, property managers, as well as government regulators and environmental groups.

Lawn installation and management practices are driven largely by consumer expectations. While this manual will mostly be used by turf industry professionals, it is important to remember that many people carry out their own turf maintenance.⁵ Consumers have indicated their commitment to using sound cultural practices and moving toward environmentally responsible approaches.⁶ Because consumer desires are the driving force behind our practices, consumer education is an essential component of any risk reduction program. This document supplies important cultural information for our region that is often missing or glossed over in other consumer documents. It complements and expands on existing information published by industry and government agencies.

What is a sustainable lawn?

The short answer is that a sustainable lawn is a healthy lawn. Dr. James B. Beard, a recognized authority on lawns, wrote “...the darkest green turf, which many people strive for, is not in fact the healthiest turf. A medium green turf with a moderate growth rate will have the deepest root system with less thatching, reduced disease and insect problems, and increased tolerance to environmental stresses such as heat, drought, cold and wear.”⁶

The turf industry is driven by expectations of consumers. They have been conditioned by years of promotion to expect a manicured, closely cut, deep green, “golf course putting green” look. While such a surface is necessary for high quality golf play, it requires very skilled management that is neither appropriate, nor necessary, to produce a healthy lawn. The information in this manual shows how the desired characteristics of an attractive lawn (uniform colour; dense, resilient growth) depend on what happens below the surface. Like all plants, turf grasses depend on the root system to foster growth. Practices that encourage deeper, more vigorous roots result in healthier turf that can be maintained with fewer inputs. Conversely, practices that slow root growth will show up in poorer

appearance of the turf and create the need for more labour, water, fertilizer, insect and weed control to keep the turf looking good.

Sustainable lawns require a minimum of irrigation water to maintain health. An important observation that will be described in greater detail in this manual is that some lawns in our region stay green through the long summer drought without irrigation. Studies have shown that these 'sustainable' lawns are on soils with adequate moisture storage capacity and an uninterrupted capillary flow of moisture to the surface. This manual reviews steps that can be taken during construction, at little or no additional cost, to preserve or re-create such natural soil profiles.

Another characteristic of a sustainable lawn is one that resists insect and weed infestation. This manual describes an Integrated Pest Management (IPM) approach to pest problems. IPM is defined by the national Pest Management Regulatory Agency as a process for planning and managing sites to prevent pest problems and for making decisions about how and when to intervene when pest problems occur. It is a sustainable approach to managing pests that provides excellent, long-term results, while minimizing risk to human health and the environment. Although various groups and practitioners have devised other terms – such as Plant Health Care, Environmentally Friendly Plant Care, Low Input Lawn Care, the Healthy Lawns approach, etc. – no matter what you call it, the aim is to provide acceptable growth and appearance of turf, while reducing inputs and risks to the environment.

This manual arose from a proactive attempt by the turf industry in New Brunswick to address the issues of sustainability and environmental protection. Recommendations have been broadened to include all four Atlantic Provinces. It is hoped that the information it contains, along with future training initiatives, will demonstrate our commitment to environmentally responsible practices and make it possible for these practices to be widely used.

REFERENCES

¹ Beard, J. B. and R. L. Green. The role of turfgrass in environmental protection and their benefits to humans. *Journal of Environmental Quality*. 1994. 23(3):452-460.

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³ Rochefort, S., J. Brodeur, Y. Carriere and Y. Desjardins. *Making IPM Work in Turf*. Centre de recherché en horticulture, Department de phytologie, Université Laval, PQ. Presented by S. Rochefort at the New Brunswick Horticultural Congress 2002, Moncton NB. Feb. 12, 2002.

⁴ NBHTA. Survey of Membership Regarding Soils and Integrated Pest Management Options for Turf. 2000. Unpublished. Available from: NBHTA, 1235 Rte 172, Letete NB E5C 2R6.

⁵ PMRA Healthy Lawn Meeting, Dec. 2000. It was indicated that 75% or more of pesticides used in the lawn and home garden sector were applied by homeowners rather than by professionals.

⁶ Ipsos Reid survey, April 2001. Attitudes to Pest Control Study.

⁷ Beard and Green, op. cit., p. 458.

FURTHER READING

McDonald, David K. *Ecologically Sound Lawn Care for the Pacific Northwest*. 1999. Seattle Public Utilities. Seattle, WA. 79 pages. An excellent overview of current environmentally friendly turf maintenance approaches and practice. Application rates and timing apply to west coast conditions, therefore should be adjusted to our climate. Includes a comprehensive summary of current turfgrass references. Available on-line at: <http://www.ci.seattle.wa.us/util/lawncare/LawnReport.htm>; hard copies available from New Brunswick Horticultural Trades Association; cost \$15 plus postage.

Eggen, J. L. *Turf Management – Principles and Practices*. Study Guide, 11th Ed. 1998. Department of Horticulture, University of Guelph. 1-519-824-4120 Ext 2232. Cost \$25. The most comprehensive and informative Canadian text available to turf managers.

Sheard, R. W. *Understanding Turf Management*. 2000. Sports Turf Association of Ontario. ISBN 0-9686568-0 3. Excellent discussion for the concerned turf manager, by one of Canada's top turf experts.