

G.T.I. SPORTS TURF

Newsletter

VOLUME 4
ISSUE 4

DECEMBER
1991

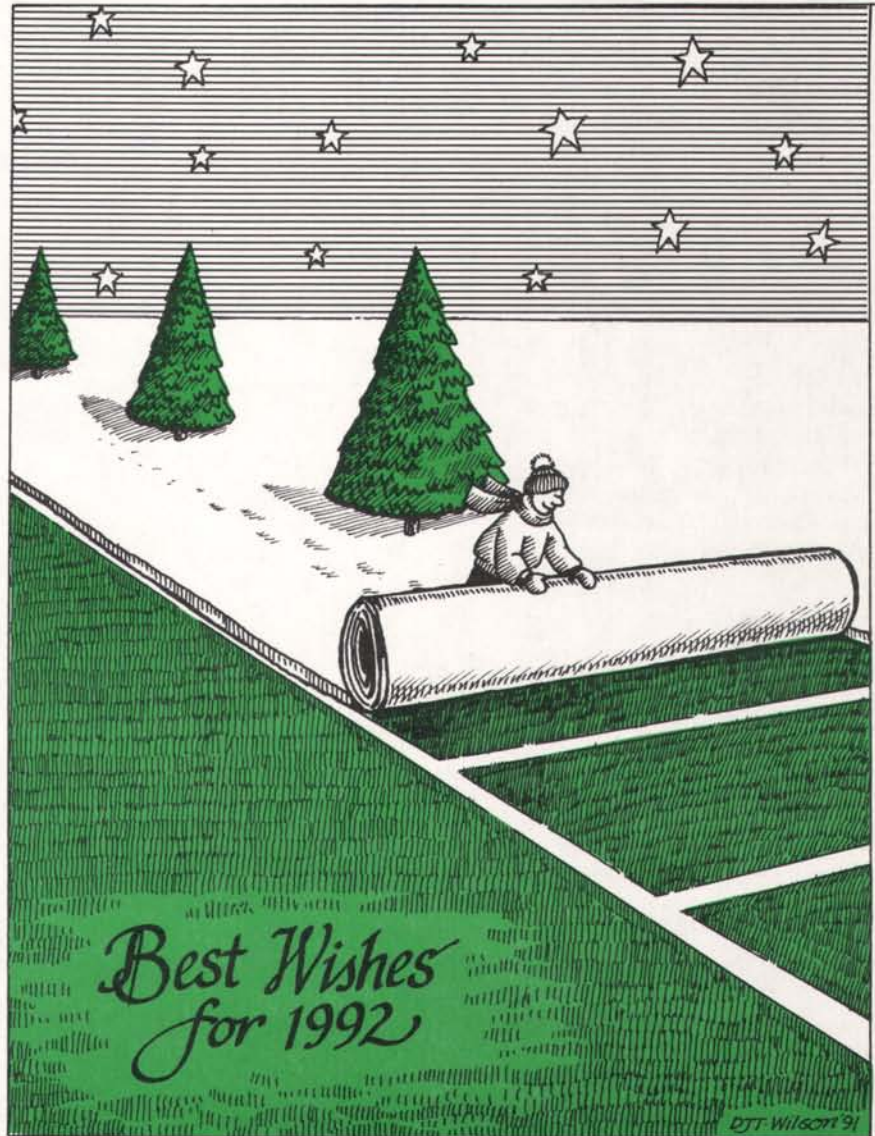
Sport
Turf
4(4)
1991

...for better, safer Sports Turf

Seasons Greetings!

"We are at the threshold of another year, and such an occasion brings on thoughts. There are thoughts of the past year, both happy and sad. And there are thoughts of the future, perhaps wondering, perhaps full of plans for the days ahead. If there are fearful thoughts, let us try trust; if there are gloomy thoughts, let us look to the sunrise of new hope. May we cross the threshold with purpose and faith... for here is a brand new year!"

-Esther Baldwin York



IN THIS ISSUE

Coming Events	2
Understanding Turf Management, Part 3: Soil Structure, Density and Porosity	4
Supra Poa Supina: The grass that's got it made in the shade	6

EDITORIAL

1991 has been a good year for the Sports Turf Association, largely due to our hiring an executive secretary, Dr. Bob Sheard, who has put us on the right track administratively. He's had a busy year.

Membership has increased in 1991, so we hope that means we're getting information out to more people to help them do a better job. Because we now have all our memberships listed, labels are easy to print for newsletters and other mailings.

Bob did a great job of editing and printing our *Athletic Field Managers Guide* — not an easy task with so many different authors. Sales of the booklets are going well.

He has also finished editing three videotapes that we think will be useful for in-service training sessions. The board is working on marketing these tapes, which should be available in the new year.

Bound copies of our bylaws have been sent to all members.

Our Field Day was not as well attended as in other years. This was disappointing because we thought \$25 for a day's education was phenomenal for a recession year. Remember, if you hear any speakers you think would benefit fellow STA members, please let us know. And if you'd like to host a Field Day at your facilities, let us know that, too.

I see Ken Warner has stepped down as executive secretary of WCTA and that Bob Wick took over as of Nov. 16.

I would like to thank all of you who contributed articles or wrote in with questions. Keep them coming in 1992. Best wishes for a blessed Christmas and meaningful New Year.

Michael Bladon

Did you know?

We've made many contacts with the turf industry over the past year, and our office receives a lot of information each month.

We send information and newsletters to the Turfgrass Information File at Michigan State University, we have contacts with the Prairie Turfgrass Research Centre at Olds, Alberta, and our newsletter goes out to many community colleges involved in turfgrass studies. We've also had articles in the *Ontario Lawn Bowler* and publications of the Ontario Association of Landscape Architects, the Ontario Amateur Football Association and the Western Canadian Turfgrass Association.



Our members include landscape architects, school boards, private schools, universities, community colleges, parks departments, lawn bowling clubs and horticultural services related to sports fields. They also represent all facets of the turf industry from seed suppliers and irrigation specialists to sod growers. Subscribe to the *Sports Turf Newsletter* for \$20 a year and get four issues of the newsletter.

Coming events:

1992:

January 7-9

First Annual Ontario Turfgrass Symposium, University of Guelph, Guelph, Ontario.

Contact Mira Soni at
519-824-4120, Ext. 3814.

February 23-26

Western Canadian Turfgrass Conference at Victoria/Empress Conference Centre, Victoria, B.C.
Contact Bob Wick at 604-467-2564

March 1-3

Prairie Turfgrass Conference, Manitoba.

Contact Stephen Olthof at
204-284-3282.

Free Literature for your Files

*Your Facility Safety Plan:
A common-sense approach to
managing risks*

Six comprehensive manuals that will provide you with the tools to (1) review your existing plans (2) enhance those plans and (3) develop and carry out a system of prevention that will provide adequate protection to your staff, your volunteers, and your clientele.

Be confident that everyone using your premises can do so with a minimum chance of accident or injury.

This is a resource developed by the Ontario Ministry of Tourism and Recreation and distributed by the Safety Resource Centre.

For your free set contact:
The Safety Resource Centre
Suite 407,
1220 Sheppard Ave. E.,
Willowdale, Ontario M2K 2X1
Call toll free anytime: 1-800-
668-7744. In Toronto, 495-4025.

Questions and Answers

Dear Mike:

I have large areas that used to be grass, but are now dried up and can be lifted by hand. They are mostly in areas that have no irrigation. I realize it's late for this year, but whatever you can find out may help for next year.

Rodney Fairfax
Collingwood, Ontario

Dear Rodney:

It sounds like you may have been invaded by a white grub, probably the European chafer, which has been almost epidemic in the irrigated low-rainfall areas of Ontario.

It will cut or chew off the roots of the grass plant to about an inch below the soil surface, which allows the sod to be lifted easily. Below the surface, you will find small, C-shaped grey-white grubs. The adult is a hard-shelled beetle.

Unfortunately, these grubs attack most grasses. Control depends on the severity of the problem. Skunks, birds and other small animals will root out and eat these grubs, but leave the area looking somewhat unsightly.

You can spray affected areas with a recommended chemical such as Diazinon, but it must be used before a rain or watered in with irrigation, otherwise you are wasting your labour and money.

One of our experts, Annette Anderson, says a late fall fertilization can also be useful to help the grass plants build up before freeze up, which in turn promotes a faster green up in the spring. Use a high-nitrogen fertilizer such as 31-0-0 and apply while the plant can still take up nutrients. Some overseeding may be required in the spring.

Ontario Turfgrass Symposium

The First Annual Ontario Turfgrass Symposium has been a long time coming, but like the Sports Turf Association, it's "an idea whose time had come." Bob Sheard has been involved in meetings on the symposium, and Annette Anderson has been pulling it all together, including arranging many of the speakers. There are already more than 200 delegates registered, and the trade show is filling up quickly. Sixty of the 80 booths are filled, with almost a month to go.

The symposium promises to be great, so don't miss out because you couldn't get a cheque in time from your employer. Write a cheque yourself and get reimbursed later. You'll be glad you went.

NOW AVAILABLE:

An Athletic Field Managers' Guide for Construction and Maintenance

ORDER FORM

(Please print)

Please send _____ copies of the guide to:

Name _____

Address _____

City _____ Prov. _____ Postal Code _____

Price: Association members - \$8.00/copy

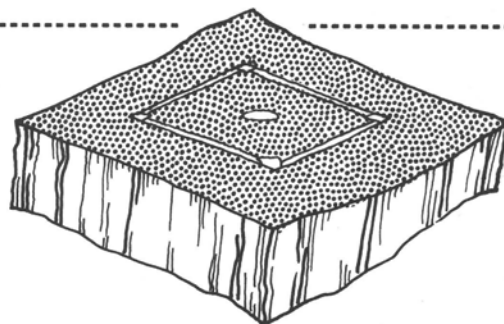
Non-members - \$12.00/copy

(Price includes federal and provincial sales tax and mailing costs)

Make your cheque or money order payable to:

The Sports Turf Association and mail to:

SPORTS TURF ASSOCIATION, 82 Rodney Blvd., Guelph, Ontario N1G 2H3



UNDERSTANDING TURF MANAGEMENT

The third in a series by
R.W.Sheard, PhD., P.Ag.

SOIL STRUCTURE, DENSITY AND POROSITY

If the mixture of sand, silt and clay particles in the soil remained separated as individual particles the smaller particles of clay and silt would migrate into the holes between the larger sand fragments to create a dense material such as found at depth in the subsoil of a normal soil. An analogy would be to take a bin of softballs, fill the bin with marbles, shake it till no more marbles can be added, then add SCU pellets until no more of them can be added. This simulation would have little porosity and is analogous to a dense, compacted soil.

Such a soil would be very poor for root growth as it would have little air or water movement and much resistance to root penetration. Good turf management requires the use of cultural practices which will help to reverse this situation.

SOIL STRUCTURE

Fortunately soil particles tend to group together into larger, semi-permanent arrangements known as aggregates (clods, peds, crumbs). The result of aggregation is called soil structure and its importance is that it tends to make soils which are high in clay act like sand in terms of air and water movement.

There are a number of factors influencing the ability of a soil to have a stable soil structure. The primary factor is soil organic matter whose breakdown products create a cementing effect, holding the mineral particles together. Calcium,

iron and the type of clay also have an effect.

It is necessary, however, to move the particles close together before the cementing action can become effective. This movement is brought about through root action, soil organisms such as earthworms, freezing and thawing, and wetting and drying of the soil.

Of prime importance is the resistance of the aggregates to disintegration under the destructive forces of wind, rain, vehicle and foot traffic; the latter two being the forces of concern on sport fields. Stability is very closely related to the amount and type of organic matter present, with turf providing the most effective means of promoting stable soil structure. Nevertheless under continued traffic, particularly when the soil is excessively moist, the structure can be destroyed and the soil will compacted.

Soil structure is of great significance where the soil contains silt and clay. **Soil structure, however, is not a factor in sport fields constructed on**

sand as sands will not form aggregates. This is why selection of the correct size distribution of sands is critical to prevent migration of fine sand particles into the spaces between the larger sand grains, creating a dense root zone.

SOIL DENSITY

The degree of compaction of a soil is measured by determining the apparent (bulk) density of the soil. The determination is a simple procedure, involving the insertion of a small (5-cm diam. X 2-cm deep) ring into the soil. The ring is carefully excavated, trimmed level at the top and bottom and dried for 48 hours at 100C. The density is the dry weight of the soil in each cubic centimetre of volume; this volume includes both solid particles and the spaces between the particles - the porosity. The more compacted a soil the greater the density; that is, the greater the weight of soil particles compressed into each cubic centimetre and the smaller the air spaces (Table 1).

Table 1: The relationship between compaction, apparent density and porosity.

Degree of Compaction	Apparent Density (gm/cm ³)	Total Porosity (%)	Macro Porosity (%)	Micro Porosity (%)
Low	1.31	50.5	21.5	29.0
Medium	1.49	43.7	15.8	27.9
High	1.64	38.1	10.9	27.2

Soils may vary in density from 1.0 to 1.75 gm/cm³. Then ideal soil described in the first article of this series would have a density of 1.32. It may be calculated to show that such a value would have 50% pore space. Natural soils with densities beyond 1.55 can be considered to have compaction problems. Sports fields constructed on sand, however, can be expected to have a density as high as 1.65 while still retaining good air and water characteristics.

SOIL POROSITY

The first article in this series describe the relationship between mineral and organic material, air and water. The air and water in the soil existed in the pore space in the soil, thus an understanding of soil porosity is a further step in understanding good turf management.

The size of the pores range from sub-microscopic between silt and clay particles to the very large pores visible to the eye which are formed by earthworms and decaying root channels - commonly called biopores. For this discussion they may be divided into two broad groups - *macro pores*, the larger pores, and *micro pores*, the smaller range of pores.

Analytical techniques exist which permit the assessment of the relative percentage of each group of pores in a soil sample. The total porosity may be calculated directly from the density measurements. This single value, however, says nothing about

the size of the pores which is important in water movement.

Other techniques, which give an assessment of the relative size of the pores are based on the amount of water retained in the soil in a container, such as the ring described above, when it is placed in a special apparatus to which suction can be applied. When the soil is saturated with water 100% of the pores are filled with water, thus the total pore space equals the volume of water in a measured volume of soil. If the soil is allowed to drain freely until all the water that will flow out due to the pull of gravity has occurred the *macro pores* will be empty. The volume of water that is removed in this process from a measured volume of soil is the macro porosity. Since the macro porosity plus the micro porosity must equal the total porosity the micro porosity is obtained by subtraction.

Macro porosity (non-capillary porosity, aeration porosity) is important in the rapid drainage of excess water from the soil after a heavy rain or excessive irrigation. Rapid removal of this water allows the air essential for root function to return to the soil.

Micro porosity (capillary porosity) retains the water required for plant growth. It also becomes filled with air as the plant extracts the water from these fine pores. The water in these pores is not lost by the forces of gravity. However, the smaller the pores, the greater the difficulty the plant experiences in extracting the

water.

Compaction results in a reduction in the number, size and continuity of the soil pores. Generally the macro pores will be destroyed first (Table 1), reducing the rate of water infiltration and the drainage ability of the soil, the aeration of the soil and the ability of roots to penetrate the soil. The lack of oxygen further reduces the grass roots ability to penetrate the soil. The more moist a soil the more easily it can be compacted because the water acts as a lubricant allowing the particles to move into closer arrangements.

Fortunately, the grass ecosystem is recognized as the optimum system for promoting soil structure, hence reducing the apparent density of the soil and increasing the porosity of the soil, particularly the macro porosity. Hence using cultural practices which favour vigorous turf growth, combined with adequate drainage, is the best preventative system against compaction.

PESTICIDE SAFETY TRAINING SEMINAR

Introductory Land Exterminators Class 1 & 3 Licence Preparation Courses

Feb. 1 & 2 - London
Feb. 22 & 23 - Toronto
March 28 & 29 - Guelph
April 25 & 26 - Ottawa

For more information or to register, contact:
TURFECS,
45 Walman Dr., Guelph, Ont.
N1G 4G8 (519) 767-1611

What's new?

***Supra Poa supina* now available**

Ever since grass seed was first planted, people have wanted a mixture that will grow and survive in the shade. They've wanted a mixture that will stand up to the punishment of heavy traffic and the beating given out by athletes. They've also wanted a grass that will help solve the unsightly problems caused by annual bluegrass. Well, the wait is over. The solution to these problems is *Supra Poa supina*.

Bred in Germany, tested for more than 20 years and proven on some of the world's top sports fields and golf courses, *Supra* will give you an opportunity to tell your customers you truly have something new and beneficial for them. In addition, you and your customers will reap tremendous rewards in the form of profits and performance.

Supra Poa supina forms a very dense turf and is especially aggressive, allowing it to overcome many troublesome weeds and grasses, including annual bluegrass. When subjected to diseases such as snow mould, *Supra* bounces back quickly.



You will find *Supra* to be the best shade grass you've ever had. We know this is a strong statement, but we also know it's true, so we're not hesitant to say so. In Europe, where *Supra* mixtures sell for a considerable premium over normal shade mixtures, the *Supra* mix outsells by a considerable margin.

Limited quantities of *Supra* are available in mixtures for sports fields, golf courses, sod farms, landscapers and homeowners. As we all well know, market conditions have made margins very thin. Here is your opportunity to reverse the trend — with *Supra Poa supina*. Remember, *Supra* is:

- extraordinarily aggressive
- extremely wear-tolerant
- the best shade grass
- very low growing.

Can Athletic Turf Stand Up to Pounding?

In an effort to establish standards for natural grass on athletic fields, Dave Minner, turf researcher at the University of Missouri-Columbia, pounds and rips natural grass turf, using machines that would make a couple of 300-pound tackles proud.

"We want safe, tough turf," Minner said as he watched a Brinkman traffic simulator, better known as "the iron football player" tear with its cleated rollers.

"This machine simulates a couple of hefty linemen going at each other," Minner said. "It tells us what type of grass systems are tougher and less likely to blow out as players make their sharp cuts and turns."

A machine measuring surface traction and a "vibration analyzer" reporting how hard the ground is are also being used in the study.

"We have the grasses. Now we're looking at the best ways to manage those grasses and the best kind of 'soil' that will make the turf stand up to the pounding of athletes while saving wear and tear on their joints."

Newer football fields have high sand content to provide good drainage. But the sand is somewhat unstable - especially if the grass is worn thin.

"We are now adding synthetic fibers to make the sand more stable and to reduce divots, tears and rips," Minner said.

"On fields that have heavy clay soils, we are using synthetic fibers and chopped rubber tires to increase resiliency and to reduce wear."

One of his goals is to find fibers that can fortify the strength of a healthy grass root system.

Lawn Institute offers new topic sheets on turf

The Lawn Institute in Pleasant Hill, Tennessee, has just published a 385-page loose-leaf notebook covering 102 special topics of concern to home gardeners and professional turf managers alike.

The topics are organized in 12 chapters:

- Trends
- Seed
- Cultivars
- Water
- Mowing
- Soil-Turf
- Pest Control
- Low Maintenance
- Lawns
- Sports Turf
- Establishment-Renovation
- I Speak for the Lawn

The information is technically detailed, but formatted differently from current textbooks. Each topic is self-contained to enhance complete understanding. Technical accuracy is assured.

The notebook is especially designed for those involved in oral or written communication. Tailor-made news releases, newsletters, white papers, environmental statements and other special reports can easily be prepared from these topics. They are also appropriate for in-house staff training or for instruction in turfgrass management.

The loose-leaf format allows selected pages to be removed, copied and then cut and pasted to prepare the exact statement you need for your report or oral presen-



tation. Original sheets go back in the notebook for reuse. No copyright is registered on this material. The notebooks are available from the Lawn Institute, P.O. Box 108, Pleasant Hill, Tennessee 38578. Cost is \$30 postpaid. For more information, call Beverly Roberts at 615-277-3722.

Brotherhood of business

To gain a customer is to gain a friend.

To receive loyalty from a customer is to be indebted to them.

To provide service to a customer is to give purpose to your work.

To be received by a customer is to be honoured by them.

To be honest with a customer is to be honest with yourself.

To show concern for your customer's business is to guarantee the success of your own.



Welcome to Our Newest Members

Joe Strutt Calgary Parks and Recreation
Peter Comer . . . Calgary Parks and Recreation
Jamie Houston . North Bay Parks and Recreation
James Douglas Wheeler/Douglas Associates
Heinz Kock Toronto Parks and Recreation
John Dance . . . Edmonton Soccer Association
Jeff Morton Kemptville College Ag. Technology

TURFGRASS INDUSTRY - SIZE AND SCOPE

from *The Lawn Institute*

Some interesting projections have been made concerning the importance of turfgrass in a hypothetical city with a population of 170,000 people. How does your area rate in the following categories for each 170,000 people?

- Turf facility maintenance involves employment of 166 people;
- Other sectors of economic activities supporting turf facilities involve employment of 110 people;
- There are 3 bowling greens utilizing 1 acre;
- There are 3 cemeteries located on 90 acres;
- There are 195 churches on 17 acres of land;
- There are 50 city parks covering 628 acres;
- There are 6 golf courses utilizing 599 acres;
- There are 2 colleges with 156 acres of grounds;
- There are 56 schools with 400 acres of grounds;
- There are 350 factories located on 47 acres;
- There are 45,200 single-family residences located on 3,495 acres;
- There are 19,600 multiple-family residences located on 987 acres;
- There are 65,465 total facilities on 6,419 acres;
- Average lawn size is 750 square feet in front and 1,000 square feet in back.
- The homeowner spends on the average \$200.00 per year on fertilizer, pesticides, seed and water. This amounts to \$9,040,000 a year spent by people

living in single-family residences.

- Lawns associated with multiple family dwellings cost about \$20 per unit to maintain each year. This amounts to \$392,000 for maintenance, including water.
- City parks, cemeteries, schools, churches, colleges and factories are located on 1,338 acres and spend more on water than any other item. Labour, supplies, equipment and water cost \$1,100 per acre for a total of \$1,471,800.
- Golf courses and bowling greens cost \$2,200 per acre to maintain each year. For 600 acres, this amounts to \$1,320,000.
- \$12,223,800 in direct expenditures on turf alone significantly affects the economy of this city. This example may be conservative for some parts of North America.

In United States, lawn and sports turf are big business as the following data indicate:

- In 1965, turfgrass was considered a \$4,300,000,000 per year industry;
- In 1982, turfgrass was considered a \$25,000,000,000 per year industry;
- California, Florida, Michigan, New York and Pennsylvania all have billion dollar turf industries. Illinois and Texas are very near this level;
- Two-thirds of all turf expenditures go to maintain home lawns;
- Turf management is labour intensive. It is estimated that 380,000 people make their living directly from the care and maintenance of turf in the United States.

1991 BOARD OF DIRECTORS

PRESIDENT

Bruce Calhoun

EXECUTIVE SECRETARY

R.W. (Bob) Sheard
Phone (519) 763-9431

VICE PRESIDENT

Peter Kleschnitzki

PAST-PRESIDENT

Michael Bladon

TREASURER

William Harding

DIRECTORS

Stephen Bodsworth
Christopher Mark
Doug MacMillan
Steven Pollard

NEWSLETTER EDITOR:

Michael J. Bladon
185 Edinburgh Road S.
Guelph, Ontario
N1G 2H8

Production/Design:

Debbie Thompson Wilson
Willustration
Guelph, Ontario

