ONTARIO Turfgrass SYMPOSIUM

Conference Highlights

- Breeding Improved Turfgrasses for Sports Turf Use by Dr. William Meyer
- Sports Turf Managers' Certification Program by Steve Trusty
- Sports Turf Safety and Risk Management by Dr. Arthur Mittlestaedt Jr.
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Breeding Improved Turfgrasses for Sports Turf Use

DR. WILLIAM A. MEYER

Dr. Meyer is the Associate Director at the Centre for Turfgrass Science at Rutger's University's Cook College located in New Brunswick, New Jersey. Bill has developed or co-developed over 60 improved turfgrass and forage cultivars. He was on the Board of Directors for the International Turfgrass Society from 1989 to 1997.

New Brunswick is located in a good transition zone and is subject to a wide variety of summer stresses. These factors, in combination with the many disease problems found around the United States, make New Brunswick a good place to test turf-related plants.

Ryegrass history

The variety Manhattan was introduced in 1967. Dr. Reid Funk, working out of Rutger's University, found these clones in Central Park in six to seven inch patches that came from one seed 150 years earlier. He put the material together and named it Manhattan, the first turf type of ryegrass. Dr. Funk told people there might be a market for ryegrass, maybe 1,000,000 pounds per year; however, he warned that caution should be taken in seed production since there is not a lot of germplasm available.

Current figures show that the market for turf type perennial ryegrasses is around 200,000,000 pounds per year. Dr. Funk was a little conservative in his estimate of the total market demand, but he was correct to issue a warning on seed production. We need new material. Most of the present varieties and the germplasm we are using at Rutger's came from the mid-Atlantic area including the Manhattan source. Citation, Pennant, and All-Star came from Baltimore City's old areas. I found plants in St. Louis and in Washington D.C. in the mid 1970s.

Disease Resistance

It takes years to breed in disease resistance, and we have continued to make improvements. In 1997, many of the plants were outdoing the top rated varieties that existed in 1995. So there is still improvement in ryegrass for overall quality. We have bred in a lot of resistance for leaf spot in the ryes, which is very important during establishment time. Much improvement has been made in brown patch. In contrast with the straight European variety, we have made good progress. We haven't any resistance to gray leaf spot (prevalent in our area), but we have developed some resistance to red thread—an area where we still need to improve. We do not have disease resistance genetically to Pythium. Future improvements also need to be made with respect to good heat and cold tolerance—especially in ryegrass.

Breeding

In the cool season, there are two different breeding methods that we use to try to breed grasses for athletic field usage. In the case of Kentucky bluegrass, breeding is what we call asexual or apomictic. This means that when the flower opens up, a cell outside of the mother tissue becomes the embryo. Since the embryo is like an identical seedling to the mother plant, we have to use some very strange techniques to change or make a new bluegrass hybrid. One of the problems with this asexual characteristic in bluegrass is that it is very difficult to predict bases on these crosses.

In the case of all other cool season grasses, ryegrass being one, they are what is called open-pollinated. Each plant is self sterile and needs pollen from another source in order to produce seed. So we can make use of 220 clones that have the same pollen time, cross these plant progenies, and make selections based on the best mixes found in each research cycle. Each cycle builds on the previous one. With open pollination, they are incompatible, and we make what we call population improvement on the species. In the case of ryegrass, Dr. Funk started breeding the species in 1961, and we can trace breeding records back 45 years. Some of the material used to start the program is still available. Progeny testing is done. Individual plants are lined out in three by five foot plots. We can observe each clone and test against the mother plant to identify the paternal affects on each progeny. Of approximately 1000 planted, we select about 0.5% that will increase for the next year.

Each cycle builds on the previous one. If you have followed tall fescue or ryegrass development, you will know we have made continual progress in terms of density, quality, colour, and mowing quality.

We have also gone to places in Europe like Warsaw, Poland. The origin of ryegrass species and surviving clones were found around Old World buildings which date back two to three hundred years. These were crossed with the population at Rutger's in order to combine the old with the new.

Traffic Tolerance

Traffic is a complex term. It not only refers to the tearing away of the turf, but also to compaction, and the ability to grow in compacted soils. If you look at our present cool-season species, ryegrass is by far the most traffic tolerant. It has the ability to take pounding, particularly in walk off areas of the golf course, and it does well in compacted soils. Bentgrass takes traffic, but unfortunately it has to be mown at least at half an inch or less to look good. This is too short for most athletic situations.

With Kentucky bluegrass, some of the improved varieties are wear tolerant. Tall fescue is a grass that is wear tolerant once it is established. It is slow to develop and slow to establish. The fine fescues as a group have poor traffic tolerance. Breeding of traffic tolerant grasses is something we worked on this summer. We looked at bluegrasses and ryegrasses and found that the denser, more aggressive, healthier varieties are the most traffic tolerant. We also found that dollar spot increased with traffic, something we did not know previously.

The amazing thing about ryegrass is its ability to establish. Varieties are much better to mow. The beauty of the ryes is that in two weeks they start to tiller and make turf even under traffic. I make that point because tall fescue will not tolerate traffic during establishment whereas ryegrass will during establishment.

In order to come up with a traffic simulator, we brainstormed last winter. The idea arose to take the broom off a Sweepster and put it on the front of a Toro Groundsmaster. We then took the Sweepster head off the broom and replaced it with rubber fingers. The fingers were then mounted on the Sweepster, operating at 150 rpm. These 10" rubber fingers battered the turf and followed the contours. At 150 rpm, we did not need to go over the plots as often. We always went in two directions, and each plot was done twice. We found more dollar spot on the weaker varieties after traffic simulation.

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Although not as important in Canada, we have a limited germplasm source for tall fescues. In our breeding program we are looking for more. We have had continued improvement in colour, density, and persistence. In seed, we produce 100 million pounds per year in the U.S. in turf type and 100 to 160 million pounds of K31. We continue to show improvement in leaf spot and pink snow mould which is a problem in Canada. Tall fescue will not handle traffic until about three months old.

Fine fescues were destroyed after only five passes with the simulator. Hard fescues may become more traffic tolerant.

In the bluegrasses, the very aggressive varieties will cover a three by five foot plot in five to 10 years and spread six to eight feet. They have good vigour and will crowd other grasses and dominate blends. The dwarf varieties have consistently been successful since the 1980s. Called northern tolerant compact types, they have topped national trials, displayed a higher density and an overall increased disease resistance, and have reduced clipping accumulations. Slower to green up, they always do well under high maintenance; however, they do not have as good winter colour. We encourage people in cold areas not to use ryegrass alone, but to blend it with 70% bluegrass and 30% ryegrass. Midnight, Able I, American, Indigo, and Glade all are very good. ♦

Sports Turf Managers' Certification Program

STEVE TRUSTY

We were pleased to have the Executive Director of the Sports Turf Managers' Association (STMA) with us for the symposium. Steve has a very busy schedule and was on his way to the STMA Annual Conference in Orlando, Florida, following his visit to Ontario. In his talk, he provided informative statistics and a brief outline about the certification program for sports turf managers that the STMA has developed in the U.S.

STMA History and Membership

The STMA was founded in 1981 by Harry Gill, Dick Ericson, Dr. Bill Daniels, and George Toma. They then incorporated in 1985. Their purpose was to share information, train, network, educate, and enhance professionalism in the industry. The STMA is an organization of professionals who represent all segments of the sports turf industry. We work to combine the science of growing grass and the art of maintaining sports fields in a safe and aesthetically pleasing manner.

Benefits of joining the organization include education through regional institutes and conferences; support for sports turf research; a national awards program; access to the STA National Conference and Exhibition; and complimentary subscriptions to the *Sports Turf Manager* and *Sports Turf Magazine*.

There are different membership categories ranging from:

- Professional sports turf facility manager
- 4-year college and university sports turf facility manager
- Other schools, research, extension agents, teaching
- Parks and recreational sports turf facilities
- Commercial (U.S. or international)
- Student (non-visiting)
- International (other than commercial)

Parks and recreation make up about 14.4% of membership, commercial 17.6%, and students 5%. There are also nine chapters which comprise some 1200 members and an additional 1200 national members. Sports turf industry generated approximately 1.5 billion dollars in 1997 representing about 40,000 facilities.

Chapters perform service work. For example, they may build a pitcher's mound for a high school who has neither the money nor the expertise. This sometimes takes up to two days work! It is often advertised in the local paper, which helps generate pride in the school and recognition for the STMA. When the City of Muscatine, Illinois, won a national award for soccer field of the year, its mayor went to Anaheim, California, to receive the award!

Certification

The purpose of the certification program is to raise the turf industry's degree of professionalism. It establishs credentials through education, experience, knowledge, and testing. Furthermore, it provides recognition for professionals, creates better salaries, and increases opportunities for education and training. Professional baseball has said they want to hire certified Sports Field Managers.

A point system has been worked out where an individual would need to accrue 40 points to apply for testing. Points would be awarded for education, for each year of experience, etc. Testing would be multiple lists of questions on various subject matter with 80% required to pass in each section. Some areas would include pesticides, agronomics, sports specific, etc. Persons would be awarded a Certified Sports Turf Manager (CSTM) and would have to abide by a code of ethics and be subject to a board of review.

The whole certification process has been ongoing for the last year and will be voted on at our Annual General Meeting in Orlando.

To conclude, STMA has had a 50% increase in membership, including several international members. Numbers now seem to have stabilized. We have gold and silver levels of sponsors with companies like Novartex, Scotts and Hunter contributing. The following awards are given by the Association yearly:

- STMA/Beam Clay® Sports Turf Magazine Baseball Diamond of the Year
- STMA Softball Field of the Year
- STMA Football Field of the Year
- STMA Soccer Field of the Year
- STMA Founders' Awards: The Dick Ericson Award; The George Toma Golden Rake Award; The Dr. William H. Daniel Award; and the Harry C. Gill Award. ♦

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STA President Chris Mark (right) thanks Steve Trusty, Executive Director of the STMA, for his informative talk at the Ontario Turfgrass Symposium.

Sports Turf Safety and Risk Management

DR. ARTHUR MITTLESTAEDT JR.

Our society is becoming increasingly "lawsuit conscious." In light of this new consumer mentality, sports turf managers need to have a thorough knowledge of safety both on and off the field. In this article, Dr. Mittlestaedt does a thorough job of covering many aspects of sports turf related safety issues.

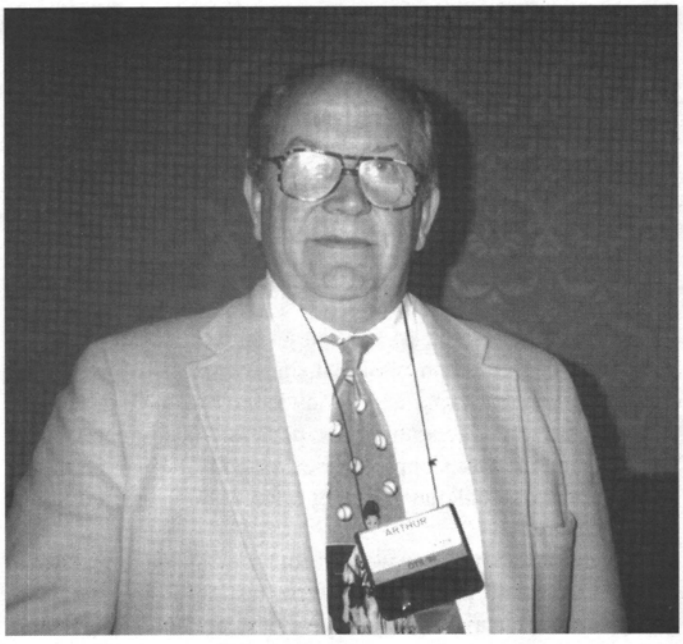
We have to learn not to make excuses or to pass the blame. The grounds or turf manager must be concerned with consumer safety as well as occupational safety. Federal and provincial agencies control the workplace. Turf managers must have a base for understanding the concept of liability which results from mistakes. They need to be aware of and take advantage of the very large pool of professionals who are available to them.

Turf managers must also have a thorough knowledge of the green industry. The "deep pocket" syndrome has targeted all facets of the green industry when an injury occurs. The person who accepts the safety responsibility could be anybody in grounds management, the superintendent, or the pesticide operator. The accident aspect or risk responsibility is borne by an expert retained to provide an overview, preview, and review of the safety requirements necessary to prevent injuries or fatalities. This safety specialist should be regarded as the right hand of the grounds manager. The actions of this individual can affect the responsibility of the owner/operator and their agent, the grounds manager.

When safety is absent, negligence increases and injuries and fatalities often result. What happens next can turn into a litigative process. The sports turf manager must be aware of the safety measures that are necessary for sports turf today. As new safety measures, tools, and techniques are developed to enhance the consumer environment, they must be disseminated throughout the profession. Sports turf safety measures are applicable in many types of venues. Many have other planning, designing, and engineering criteria that affect safety which add to the generic measure that will be discussed. These venue-specific criteria are too numerous to address today; however, they may be obtained by contacting the Recreation Safety Institute.

How can you make your sports field a safer place? Follow the pointers mentioned in this list and you will be well on your way to better, safer sports turf:

- Eliminate holes, ruts, ridges, settlement areas, grass bumps, texture/mass differences, and entrapments along fence lines which differ from the surrounding lawn area.
- Perform constant and consistent mowing throughout the turf area at an average height that conforms to the type of play or sport.
- Check the seams on artificial turf and or butting edges to other materials.
- Remove obstacles or structures from game areas on turf fields, e.g. above ground irrigation.
- Spray for insects, wasps, bees, ants, and others that may nest in lawn areas.
- Establish appropriate barriers between lawn uses.
- Secure both non-public and/or non-consumer access areas.
- Establish emergency ingress and egress routes for ambulances, service vehicles, etc. to avoid transport getting bogged down in lawn areas.
- Check clearances for perimeter ancillary facilities, e.g. tables, TV cameras, light standards, scoreboards, and other such features.
- Conform to game rules e.g. shoe or traction performance, ball performance, and impact attenuation.
- Determine the most appropriate turf be it artificial or natural and the type of either for the potential use. Standards are in process today to measure the various characteristics for both artificial and natural turf systems through the American Society for Testing Materials (ASTM).
- Establish specifications for the safe use of vehicles and other equipment used in the maintenance of sports fields that the public may come into contact with such as mowers, seeders, sprayers, or cultivators (the public being all who use those facilities, including students, etc.).
- Establish controls and storage procedures for materials including fertilizers, pesticides, gasoline, aluminum irrigation pipes, and drainage pipes.
- Adopt procedures for safe spraying, fertilizing, and other turf preparation methods.
- Prepare regulations setting forth those rules encompassing



the various prohibitions that must be posted before, during, and after a work effort.

• Enforce a planned prohibition sign system and ensure that it conforms with CSA or municipal standards and other criteria.

• Formulate a schedule of warning labels that must be placed on any area that the public or an employee may come into contact with that might be of a toxic nature (check MSDS sheets).

• Outline a schematic layout of all protective devices that are in use or must be in use in the care and requirement of each person and where are they kept.

• Prepare a policy for all emergency treatment that can be applied by staff, first-aiders, or emergency service response personnel. This is for both the public and employees and should conform to local health standards, ASTM, CSA, and other medical authority guidelines.

• Prepare a policy for incident procedures that staff involved with the public assembly turf areas must execute in coordination with other authorities.

• Establish a plan in case of disaster or emergency such as fire, storm, explosion, or tornadoes.

• Update game line materials such as foul lines or ditches etc., so they do not affect either the player or the spectator from an injury point of view.

• Review protective barrier types around fields to ensure they are or will not splinter, e.g. old wooden snow fence slats, steel stakes, and wire strands.

• Review cable, TV, and speaker conduit connections and make sure they are covered and that warnings are posted.

• Establish an inspection routine using written forms to pinpoint hazards and dangers. Ensure an individual is designated to do repairs and follow-up to correct these defects.

• Train and prepare personnel in preventative and corrective turf and field maintenance programs.

• Check the condition of under-surface irrigation or drainage devices, couplings, and sprinkler heads and remove exposed parts that could impede or impale a player.

• Review on-field drain systems and perimeter based designs for potential hazards such as ditches, culverts, street drains, or covers.

These are only a few of the many safety measures that I have been exposed to as an expert and a designer in the field. These are safety concerns that you should not forget nor disregard. We may simply think of the green industry as the enhancers and maintainers of turf and other orchestrations, but reality dictates that we are becoming the targets of a legally conscious society. We should not allow this and other exposures to prevent our use of sports turf. Include safety consciousness and awareness in your work ethic tomorrow and in the future. ♦

Editor's Note: If you have questions with regard to this article or other field safety concerns, please contact Dr. A. Mittlestaedt Jr. at The Recreation Safety Institute; Tel. (516) 883-6399 or by fax at (516) 883-1814.

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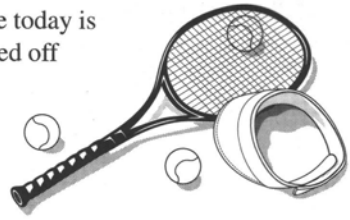
Lawn Tennis Court Maintenance

THOM CHARTERS

The origins of the game of tennis are uncertain, but it is at least as old as the 14th century. The grass courts at Wimbledon were in place in 1873. There are few private grass courts in Canada, Vancouver has two. It is there that the Davis Cup, an international competition which dates back to 1900, is played.



The tennis club I will describe today is the High Park Tennis Club located off the Lakeshore on Indian Road. Some time ago, a few younger players thought it might be fun to play tennis, so they acquired High Park, a former bowling green.

The green has a very high sand content and as the members knew little about maintenance, they called in myself. They had allowed the green to lie fallow for two years, so we determined that the first order of business was to take soil samples. This allowed us to set up a fertilizer program. We used copious amounts of a starter fertilizer at 15 pounds per thousand square feet.

The green is syringed quite heavily with water which makes it much easier on the legs than if it were hard. We use an old spiker which is pulled around the court.

At first, the lines were painted by hand, now we use a Fox Valley paint striper and latex paint—we also use strings.

The turf is maintained using a Bannerman mower at a height of 5/16 of an inch. We do not use any fungicides as the area is enclosed and there is very little air movement; however, we do treat for snow mould. Potash and phosphorous are kept high. We use 2 lb. in the growing season and an additional 1.5 lb. of nitrogen. We also use a portable net system that enables us to change the direction of play and cut down on wear.

The club has 65 members and operates from May to the end of October. We spend about $6500.00 a year on labour and materials. Canada professionals such as Helen Kelesi will use our court to get the feel of playing on grass prior to going to Wimbledon. ♦

Editor's Note: Wimbledon has gone to ryegrass to combat wear problems.

Students will Decide Fate of Sports Facilities at University of Guelph

STEVE TUCKWOOD

If the students say yes, the University of Guelph campus could see some much-needed sports facility upgrades before next fall.

A press release, issued by director of athletics Dave Copp, said a referendum will be held in conjunction with the student elections to determine if students support the construction of an artificial turf field on the site of the present soccer field; the addition of a sports dome for winter use; the remodeling of men's and women's change rooms; and drainage and irrigation upgrades to some of the fields.

The process is similar to that taken in 1985 and 1991 when referenda results approved construction of the twin arenas and swimming pool facility.

Half of the turfed field would be domed from November to March or April and would become a winter facility for indoor soccer, ultimate frisbee, field hockey, and touch football. It would more than double the indoor sports space available at the university.

Recreation programs director Doug Dodd said the move to an artificial field would mean weather and wear and tear would no longer be a factor. "The flexibility of the artificial surface and the increased space would really help the recreational sports offered by the university," said Dodds. "Some other universities are adding these type of fields, and I think they offer excellent options for the cost."

Cost is one of the reasons the university is considering the project at this time. Low interest rates will allow for the $2 million upgrade without additions to the capital fee schedule. ♦

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Editor's Note: This is the second Ontario university to fundraise for an artificial turf facility!