TURFAX™

of the International Sports Turf Institute, Inc.

The International Newsletter about Current Developments in Turfgrass

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BEWARE - WOLF IN SHEEP CLOTHING

One of the essential steps in the early planning phase of new turfgrass facility developments is the gathering of technical information prior to making a final decision. A principal source of technical specifications is from the manufacturer and/or marketer. This is a logical early step. Each source of information will most commonly emphasize the positive features and advantages of that particular product, which is the norm.

The next step is to seek impartial, comparative information about promising candidate products. There are five sources commonly used to varying degrees in securing this needed information. Unfortunately, some sources of information which traditionally have been viewed as impartial that have become tainted in recent years.

Testing Labs. Testing labs, such as for physical and chemical characteristics of soil, have been viewed as an impartial source of technical information, not only for the actual analyses, but also for the sources of various root zone mix components. Unfortunately, some labs have become allied with certain suppliers of possible components. Thus, the question needs to be asked when contracting with a lab as to whether they have or will derive any monetary benefits, direct or indirect, from suppliers.

There also is the question of accuracy in analytical performance standards which appear to vary with some labs, particularly physical soil testing laboratories.

Independent Consultants. The first priority in consultant selection is to ensure that the proper expertise is possessed in terms of formal education and "real-world" experience, plus proven success. It also is important to select a consultant who will provide you with an impartial assessment, particularly in relation to products one may be considering for purchase. Be sure to ask the consultants whether they have in the past or currently have any arrangements with specific companies marketing products from which they derive benefit as a result of their sale and use.

Tax Exempt Organizations. A tax exempt organization that provides technical information to turfgrass practitioners must act as an impartial representative in order to sustain its tax exempt status. However, if the organization promotes a product from which it derives financial (ie. royalty) gain to the detriment of other equal or better products, they can be subject to a loss of this tax exempt status. Concerns in this regard should be raised with the appropriate governmental agency.

University Technical Specialists. Traditionally universities have sustained a reasonably impartial stance relative to various commercial products on the market. The internal university climate has changed in terms of the ability of individual faculty members to patent inventions, including by definition grass cultivars, and to subsequently share in the royalty income from the sale of these patented products. This change can adversely affect the impartiality if a particular product results in a personal monetary gain. Remember, it is not only what is said but what is not said that can be important. Fortunately, the faculty at most universities remain impartial as far as technical information.

The best source of reliable technical performance information is from detailed, replicated, comparative studies by an independent agency, that has been published in a peer-reviewed scientific publication.

Fellow Colleagues. Seeking input from respected individuals who have used the product is an important source of information to those considering purchases. However, one must be sensitive to the possibility that the decision-maker involved in the purchase, who has subsequently experienced problems with the product, may not wish to communicate these problems because that individual would not want to be embarrassed for failing to make a correct decision.

In this regard, be sure to note that four years is required after a given root zone construction and/or a turfgrass cultivar is installed before final conclusions can be drawn as to the relative success or failure. Most innovations should be good the first year, but the true test is sustained performance during increasing soil density, thatch, insects, and other stress problems. Also, even the best of root zone constructions or turfgrass cultivars may not prove successful if improper day-to-day cultural practices are used by an unqualified turfgrass manager.

FIRST STATE SEED FIELD BURNING BAN

The State of Washington has banned field burning of grass seed production areas state wide. There will be a two year phase-out. Approximately forty thousand acres (16,200 ha) of bluegrass (*Poa*) seed production is in jeopardy. It is of interest to note that no burning ban was applied to wheat, potatoes, and timber production areas. Burning is valued due to a substantially higher seed yield, which is attributed to physiological effects and disease/insect control. Will other Northwestern States follow? Will a significant portion of the grass seed production move to other countries?

UPCOMING INTERNATIONAL EVENT:

July 25 to 27, 1996. 1996 TPI Summer Convention & Field Day. Hyatt Regency Hotel, Sacramento, California, USA.
Contact: Turfgrass Producers International, 1885-A Hicks Road, Rolling Meadows, Illinois 60008, USA.
Phone: 708-705-9898
Fax: 708-705-8347

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The goal of the six issue per year TURFAX™ newsletter is to provide international turf specialists with a network for current information about turf. This newsletter is faxed to all Institute Affiliates that use the ISTI technical assistance services on an annual basis. Faxing is more costly, but ensures quick delivery to those outside the United States.

For non-affiliates, a TURFAX™ subscription is **available by annual payment of U.S. $60.00.** Payment may be made by sending a check to the address given below. Foreign orders please send a check or money order on a U.S. bank.

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JB VISITATIONS:

February - Texas.

Participated in the Annual Winter Conference of Turfgrass Producers International in Austin. Generally the sod business was good across a majority of the United States in 1995. Certainly, the big-roll sod transplanting system has become widely accepted. There is a continued interest in specialty grass production and installation.

There is considerable interest in a new dwarf hybrid bermudagrass named Champion Dwarf. For the past year this Institute has been conducting morphological and turf performance studies with Champion Dwarf. It represents a giant leap forward in an improved hybrid bermudagrass for putting greens when compared to Tifdwarf and Tifgreen. Its characteristics include (a) tolerance to extraordinarily close mowing heights in comparison to Tifdwarf, (b) the ability to sustain a high shoot density and allied resistance to moss, algae, and *Poa annua* invasion, (c) substantially reduced rate of vertical leaf growth, and (d) a multi-fold increase in stolon number and growth rate which results in better putting speed, and more rapid establishment and ball mark repair rates, respectively. Champion Dwarf certainly represents a new generation of improved dwarf bermudagrasses.

February - Florida.

Presented several invited lectures, including one on *Poa annua* Update, before the Annual Golf Course Conference and Show sponsored by the Golf Course Superintendents Association of America in Orlando. The Basic Botany and Physiology Seminar presented by Dr. Jeff Krans and JB continues to draw a strong enrollment, and consistently is ranked by the participants in the top five of over 80 seminars topics organized annually by the GCSAA. This is quite startling in view of the fundamental nature of the topic. A strong international contingent from a wide range of countries participated in the conference.

March - British Columbia.

Presented several invited lectures before the CGSA Canadian Turfgrass Conference in Vancouver. This Canadian organization continues to grow. A significant spring-1996 concern for golf course superintendents is the potential for winter injury from both winter desiccation and low temperature stress, depending on the particular east-west location. The same concerns apply to the northern United States, as well as for bermudagrass extending into southern climates.

JB Comments:

A comment that one hears from some turf managers involves criticism of high-sand root zone mixes and that native soils are better. The latter may be as good under low to minimal traffic conditions if a loamy sand to a sandy loam soil is available. However, under high traffic situations, high-sand root zones of the proper particle size distribution are the only alternative to successfully maintaining turfs on a continuing basis.

The difficulty these frustrated individuals are having is most probably a failure to achieve a living soil balance in terms of beneficial soil micro- flora and fauna, especially the fungi, bacteria and other microorganisms that permeate a living soil. The key substrate that supports these organisms is a continuing supply of organic matter which occurs primarily from the grass roots. If one fails to achieve an adequate rooting depth over time, then the lack of a food substrate will not allow the development of a balanced living soil profile ecosystem. The result will be increased use of fertilizer and pesticides. In the case of the latter, the lack of beneficial organisms that are antagonistic against the pathogenic fungi, nematodes, and insects dictates an increased use of pesticides. To repeat, one of the keys in developing a living soil ecosystem involves cultural practices that ensure the development of a deep, dense root system and resultant organic matter food source.

BUILD IT RIGHT THE FIRST TIME!

by

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and
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A study of photographs and films from not too many decades ago reveal that mud-coated players and poor-quality, unsafe playing conditions were a common occurrence. The mentality of decision-makers involved in planning sport facilities was to spend many millions of dollars in the construction of a stadium, while at the same time seeking the cheapest "dirt" possible to place in the stadium floor. It is this floor that is essentially the turfed stage on which the game is played. To a certain extent this mentality still persists today. In addition, many turfgrass managers responsible for the culture of turfgrasses in stadia were poorly trained and poorly paid for the responsibilities they were charged to implement.

Times have changed! In the United States the introduction of artificial turfs, their relatively wide spread use on intensively used stadiums, and their subsequent decline have opened the door in terms of more realistic field construction budgets. There is now an improved willingness to invest reasonable amounts of money in constructing a properly drained, quality root zone capable of providing favorable grass-growing conditions and resultant improved safety for participants. At the same time, major advances have been made in (a) the soil physics of high-sand root zone construction, (b) improved turfgrass cultivars, (c) soil stabilization techniques, and (d) specific cultural practices, such as nutrition and irrigation, that provide an extensive root system and hardy shoots that are best able to survive the intense traffic-divoting stresses.

Unfortunately, the decision-makers involved in writing the specifications and awarding bids for sport field construction may fail to seek out the best available technical information, which all too often results in root zone constructions and turfs that eventually fail. The result is the loss of turf and playing quality, plus increased injuries. Thus, the key factors to consider are now discussed.

REALISTIC CONSTRUCTION SCHEDULING

Planners must recognize that a realistic time frame must be provided for the planting, establishment, and mature turf stabilization before event scheduling can be initiated. This time frame is determined by the (a) particular turfgrass species, (b) rate of establishment of the species, (c) method of establishment preferred, (d) time of year and the associated temperature conditions relative to the growth optimum of the grass species selected, and (e) availability of a formally trained, fully experienced turf manager capable of managing the type of root zone-turf construction that has been installed. Preferably, this turf manager should be employed and on-site well ahead of the scheduled field completion date.

An innovative dimension which as yet has not been attempted would involve the installation of the turfed portion of the stadium during an early phase of stadium construction. Such a design would allow completion of the remainder of the stadium structure from the exterior, thereby allowing time for establishment, rooting, and mature stabilization of the turf. This strategy would allow an earlier opening date.

STADIUM DESIGN-FIELD RELATIONSHIPS

Most architects-engineers involved in stadium design lack an understanding of environmental-design needs as related to the interior turfed playing surface. They further aggravate this problem by a failure to seek advice from turfgrass scientists competent on this complex subject.

Some of the major design considerations include the following:

- **Stadium Orientation.** The stadium should be oriented in relation to openings or lower height structures in its upper surrounds, such that the amount of radiant sunlight reaches the largest possible turfed area on the field for the longest diurnal duration, particularly during the playing season.
- **Maximize Field Surface Air Circulation.** An innovative, but needed, consideration is the prevailing winds relative to a stadium that will facilitate air movement across the turf surface. This will avoid the build-up of high temperatures and humidities on the turfed field, which otherwise results in reduced turfgrass health and increased disease activity.
- **Partial Roof Design.** Adequate sunlight is critical for turfgrass growth in a stadium, unless supplemental artificial lighting is to be provided as in domed stadia. For a partial roof design the extent of the roof overhang must allow sufficient radiant light to reach the turfed surface, particularly during the growing season. A turfgrass environmental physiologist can calculate base data on the minimum photosynthetically active radiation (PAR) needed in all parts of the turfed field relative to the actual energy requirements of the turf for both normal shoot and root growth, plus the additional energy required to support new shoot growth needed for recovery from injury during the playing season.

  One additional design dimension that can help is the use of the appropriate translucent panels where a stadium is designed with a large roof overhang. Furthermore, the structural design should allow the periodic cleaning of dirt from these translucent roof panels to facilitate continued transmission of radiant energy to the turfed surface.
- **Non-Turfed Surrounds.** Typically, a diverse range of activities occurs in the stadium, in addition to the actual competitive sport events on the grass field. The severity of traffic stress on the turf can be reduced if a non-turfed surrounds is provided around the perimeter of the actual turfed playing field. This is the area where most of the vehicle, automobile, band, performing act, and turf maintenance equipment traffic activities can be concentrated without adversely affecting the turf.

ROOT ZONE-PROFILE-DRAIN SYSTEM SELECTION

This author was astonished by one architect's presentation of the design and specifications planned for a stadium. Three hours were spent in discussing specifications for asphalt, concrete, electrical, plumbing and other construction aspects which were addressed in great detail. The architect then said, "of course we will install the turf field," and that completed his presentation. I asked " what are the root zone specification?" His reply was "it will be a good one." I repeated the question again, and again, was told "it would be a good one." I then asked the question "are you aware that specifications for proper root zone construction in terms of particle size distribution and profile construction are needed just like those required for concrete construction in buildings or asphalt construction of roadways." The answer was no. I then asked the question if a drain line system would be installed. The architect's reply was no. I asked why? He said it was too expensive. This obviously indicated no knowledge whatsoever on the subject, as a drainage system is one of the least expensive items to install in a turfed field, and is certainly essential. The decision-makers then decided to have the architect reassess the situation and come back with detailed specifications for a proper root zone-profile construction. The cost for this needed change was surprisingly minimal for the benefits derived, and especially when compared to the disaster that might have occurred without proper specifications.

Root zone construction should be composed primarily of a medium sand particle size range distribution that ensures rapid drainage of excess water downward through the profile and which has minimal proneness to compaction under

intense traffic stress, even in high moisture situations. In addition, a 4 inch (100 mm) gravel or crushed stone drain bed within specific particle size range immediately under the 12 inch (300 mm) root zone profile is essential in most situations. The specific particle size distribution and profile construction specifications depend upon the (a) intensity of traffic, (b) rainfall intensity during the playing season, and (c) other non-sport event activities that are scheduled on the turfed playing field. As the intensity of traffic increases the need for a high-sand root zone and ultimately an interlocking mesh element stabilized root zone are increased. It should be emphasized that the materials selected for root zone construction should meet specifications in terms of both the physical and chemical characteristics.

TURFGRASS SELECTION

The turfgrass species and cultivar(s) selected should be adapted to the specific climate of the region and capable of sustaining the desired shoot density and growth rate at the mowing height and frequency anticipated for the particular type of sport. In addition, the turfgrass cultivar selected should have the capability of achieving the best possible growth under the climatic conditions during the season when play is scheduled. For example, selection of a cool-season turfgrass cultivar with the best possible ability to grow at suboptimum temperatures is important for sports played in the late-fall, winter, and early-spring periods.

IRRIGATION SYSTEM DESIGN

The stadium design may result in a differential shadow over the turfed field for a certain portion of the daytime period. This decreases the radiant energy load on the turf which in turn affects the rate of evapotranspiration and allied soil moisture dissipation. Consequently, it is important to design an irrigation system with zonal head design and controls that will allow selective irrigation of only selected portions of the field depending on the degree of shading.

CONSTRUCTION INSPECTION

It is essential that a knowledgeable on-site **Construction Inspector** be hired as an employee of the stadium owners to ensure that the construction specifications for the turfed field are met. This is particularly critical in terms of the particle size distribution and chemical properties of the root zone mix. The individual components of the mix must be a uniform and possess the specified particle size distribution. This dictates that each individual truck delivery must be monitored.

QUALIFIED TURFGRASS MANAGER

A significant amount of money can be invested in constructing an intensively used sport field. If properly designed it should perform for an indefinite period of time. However, employment of an improperly trained and/or inexperienced turf manager can lead to disastrous results and even failure of the turfed field. The high-sand root zones with interlocking mesh element construction can provide quality playing surfaces with more than 200 hours of use during a season of competition. This ever increasing intensity of use on sports fields and associated increased income, also justifies a budget that allows the employment of a formally trained, experienced, qualified agronomist to bring out the maximum potential of a properly constructed sports field.

UPCOMING JB VISITATIONS:

May 11 to 31 - England.
June 1 to 8 - Italy.
June 10 to 13 - Birmingham, Michigan.
June 19 to 25 - Oregon.
July 8 to 12 - Ohio.

Note: As of May 6 will move our summer office to: 6900 E. Kelenski Drive, Cedar, Michigan, 49621, USA; phone: 616-228-6328; Fax: 616-228-2848