TURFAX™
of the
International Sports Turf Institute, Inc.

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TURFAX — The International Newsletter about Current Developments in Turfgrass

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The goal of this newsletter is to provide international turf specialists with a network for current information about turf. It is FAXed to all Institute Affiliates that use the ISTI technical assistance services on an annual basis. Your comments, suggestions, and requests are welcome. Start a permanent file for your ISTI TURFAX issues.

The ITSI summer address has been:
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JB COMMENTS:

Each profession typically has a distinguishing terminology that is used. Turfgrass science and culture has a distinct terminology. For turfgrass managers to become true professionals they must learn and use the unique terminology of their profession. This will not only ensure effective communications among turfgrass professionals, but also will be an indicator of an individuals unique knowledge of a true profession. Medical doctors and lawyers have used this approach for a long time. Note however, that in certain key communication one may need to define certain terminology to ensure communications with non-turf professionals. Some examples of proper professional usage are:

- Bentgrass - not bent.
- Bunker - not sand trap.
- Cultivar - not variety.
- Potassium chloride - not potash
- Pounds per 1,000 sq. ft. - not bags per field.
- Soil or root zone - not dirt.
- Tee - not tee box.
- Tifway - not 419.

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JB VISITATIONS:

April-Singapore

Presented a major half-day turf lecture organized by the Singapore National Parks Board, with Dr. Thai Wu Foong, Senior Research Officer, serving as host. Attendance was impressive.

Visited the Bukit Turf Club race track composed of cowgrass (*Axonopus compressus*). Also, toured several new golf courses under construction. The trend is to plant zoysiagrass (*Zoysia* spp.) rather than hybrid bermudagrass (*Cynodon dactylon* x *C. transvaalensis*) on fairways and tees. Only time can determine the outcome.

May-Hong Kong

Presented a half-day lecture on high-sand root zone specifications and a summary of the mesh element stabilization research. Visited both the Happy Valley and the Sha Tin horse race tracks of the Royal Hong Kong Jockey Club that have been reconstructed with mesh element inclusions. John Halliday (Chief Engineer) and Eric Lee (Tracks Manager) were the hosts. The mesh system continues its high performance level in combination with a high-sand root zone. They had 200+ mm (8 inches) of rain from 2:00 to 8:00 a.m. on race day. Yet, the track rated and performed "good" for a full race meet of eight races that day. Very impressive!

Next year Hong Kong will construct a major new sports stadium that will include the high-sand + mesh inclusion system. Note that the Urban Services Department has a number of soccer fields that average 90 to 100 games per month.

Also, observed some unique stabilization techniques for construction of very steep slopes for a new golf hole at the Royal Hong Kong Golf Club, where Gene Palrud is the golf course superintendent.

May-Italy

Observed and evaluated the new-bentgrass (*Agrostis* spp.) cultivar study conducted by the Italian Golf Federation near Turin. Turf Agronomist Paolo Croce is providing the on-site leadership, and I'm pleased to be working with him on the research project. The study is progressing very well. A uniform dollar spot (*Sclerotinia homoeocarpa*) infection had just occurred. SR1020 and Cobra were showing substantially greater susceptibility than the others across all replications. Improved shoot density, based on actual counts, were shown by Putter, Providence, and several Penn State Univ. experimental selections.

Also, made a technical visitation to the Italian Golf Federation Two-Year Turfgrass Technical School on the LeQuerce Golf Course grounds. The students were enthusiastic. They enjoy good teaching laboratories, plus a golf course just out the door. This is due to the extraordinary leadership of Mr. Roberto Rivetti, who is an elected member of the Federation Board. Also, credit goes to the Federation Turfgrass Instructors Paolo Croce, Francesco Modestini, and Alesandro DeLuca. This school is a model for many others around the world to follow.

June - Oregon

Participated as guest speaker at the Turf Seed Annual Field Day. Dr. Bill Meyer continues his leadership of an outstanding turfgrass breeding program, with the able contributions of Crystal Rose-Fricker. Hooking up with a 22 pound king salmon the next day capped a good trip.

June - Kansas

Gave the invited address before the Lawn Seed Division of the American Seed Trade Associates on "Turfgrass Trends Around the World." Seed crops projected to be good for 1993.

PUBLICATIONS AVAILABLE:

Stabilization and Enhancement of Sand-modified Root Zones for High Traffic Sport Turfs with Mesh Elements.
Authors J.B. Beard and S.I. Sifers. 40 pages. (1993). This Texas Agricultural Experiment Station Bulletin No. B-1710 contains (a) an updated summary of the Texas-USGA Method of high-sand root zone modification and (b) a comprehensive summary of the research conducted at Texas A&M University since 1985 on the mesh element inclusion system. Single copies available free of charge.

Contact Department of Agricultural Communications, Reed Mcdonald Building, Texas A&M University, College Station, Texas, USA, 77843. Phone: (409) 845-2876.

International Turfgrass Society Research Journal. Vol. 7.
Co-editors R.N. Carrow, N.E. Christians, and R. C. Shearman. 1021 pages. (1993). Contains 147 scientific papers divided into 10 sections on 1. Weed science, 2. Diseases, insects, and nematodes, 3. Soil physical properties and turfgrass response, 4. Soil-plant nutrition, soil chemistry, 5. Stress physiology, 6. Plant growth regulators, 7. Breeding and genetics, 8. Establishment and maintenance, 9. Information exchange and systems, and 10. Pesticide and nutrient fate. Price U.S. $55.00 for members and U.S. $65.00 for non-members.

Contact International Turfgrass Society, Dr. Richard E. Schmidt, Department of Crop and Soil Environmental Sciences, Virginia Tech University, Blacksburg, Virginia, USA, 24061-0403. Fax: (703)231-3431.

Weeds of Southern Turfgrass: Golf Courses-Lawns-Roadsides-Recreational Areas-Commercial Sod.
Authors T.R. Murphy, D.L. Colvin, R. Dickens, J.W. Everest, D. Hall, and L.B. McCarty. 208 pages. Illustrated with extensive, quality color photos. A must for the library of warm-season turf specialists.
Contact Cooperative Extension Service, College of Agricultural and Environmental Sciences, University of Georgia, Athens, Georgia, USA, 30602.

UPCOMING INTERNATIONAL EVENTS:

Nov. 7-12, 1993. Annual Meetings of American Society of Agronomy and the C-5 Turfgrass Division. Cincinnati, Ohio, USA. Over 100 oral and poster presentations on turfgrass research.
Contact ASA Headquarters, 677 South Segoe Road, Madison, Wisconsin, USA 53711. FAX: (608) 274-1212.

July 4-8, 1994. Second World Scientific Congress of Golf. St. Andrews, Scotland.
Papers will be presented on: the golfer, equipment, and the golf course - with the latter including turf agronomy topics.
Contact Dr. Martin Farrally, Congress Director, Department of Physical Education, University of St. Andrews, St. Andrews, Fife, KY169DY, United Kingdom. FAX: 334-74322.

UPCOMING JB VISITATIONS:

Provided for Institute Affiliates who might wish to request a visitation when I'm nearby.

- August 9 to 12 - Memphis, Tennessee.
- August 16 to 17 - New York, N.Y.
- August 25 to 26 - Phoenix, Arizona
- September 4 to 14 - Malaysia
- September 20 to 30 - Italy
- October 3 to 6 - Sun Valley, Idaho
- October 23 to Nov. 2 - Japan

TURFGRASS BENEFITS - A SCIENTIFIC ASSESSMENT

Humans have used turfgrasses to enhance their environment for over 10 centuries. Golf has been played on turfgrass for 5 centuries or one-half that time. Thus, humans have had an interest and willingness to invest time in maintaining turfgrasses for the enhancement of their environment for many centuries. Point in fact, turfgrasses may be one of the older techniques humans have used to enhance their external living environment. Thomas Jefferson, one of the foremost statesmen in the United States, once wrote that communities "should be planned with an eye to the effect upon the human spirit by being continually surrounded by a maximum of beauty."

Over 7,500 species of grasses, grouped in 600 genera, are widely distributed around the world. While turfgrasses can be identified as to their origin in specific regions of the world, most of the major turfgrasses used have been naturalized throughout most of the world for over 400 years. If humans should disappear from this continent, these turfgrasses would continue to persist and thrive.

Turfgrasses are one of the principle vegetations used on golf courses. While there are certain intensively maintained turf areas on the golf course in terms of closely mowed putting greens, tees, and fairways, more than 70% of the golf course is devoted to areas consisting of a naturalized ecosystem. These areas provide rich habitat for trees, shrubs, flowers, birds, fish, and other wildlife. Unfortunately, there is a tendency for golf courses to not be recognized for their valuable contribution in preserving a naturalized ecosystem in and near urban areas. If golf courses did not exist, these areas would probably be used either for urban residential and industrial development or for intensive agriculture.

Turfs have numerous important functions, as well as being both aesthetically attractive and important outdoor recreational surfaces. These important beneficial dimensions that contribute to our quality-of-life are too often overlooked. The maintenance of our turfgrasses contributes US $45 billion annually to the United States economy, which represents a substantial number of jobs.

Soil Erosion and Dust Stabilization. Turfgrasses are one of the more inexpensive, durable ground covers. They offer one of the most cost-effective methods to control wind and water erosion of soil, thereby protecting this valuable, nonrenewable soil resource. For example, studies have shown the comparative soil sediment loss from a very intense 3 inch (75 mm) per hour rainfall to be 199 lbs/acre (223 kg ha^{-1}) from bare crop land, whereas the loss from a turfgrass cover was only 15% as much (Gross, et al., 1991). Note that rains of this intensity are rare. Most rains in the more normal range of 1 inch (25 mm) or less are characterized by negligible sediment loss from turfgrass areas.

Water Entrapment, Ground Water Recharge and Flood Control. A mowed turfgrass has from 30 million to 8 billion shoots per acre (Beard, 1973), with a shoot density of over 26 billion occurs on closely mowed greens. The closer the mowing height, the higher the shoot density. This dense plant canopy of mowed turfs is one of the most effective systems for the entrapment of water and water-borne particulate matter and chemicals. The large amount of water runoff from impervious surfaces, such as asphalt, concrete and roofs in urban areas, carries many pollutants in the runoff water that are trapped in the turf canopy thereby protecting the quality of surface waters.

The dense turfgrass canopy acts essentially as a sponge that greatly reduces the intensity of runoff water shortly after rains, thereby (a) holding water in place which increases the rate of ground water recharge and (b) reducing the rate and amount of runoff water which decreases the extensiveness and need to invest in expensive man-made flood control structures.

Carbon Storage. A grassland ecosystem is well known for its high soil organic matter levels. A high proportion of the world's most fertile soil was formed under a grass ecosystem. The very unique extensive, fibrous root system of turfgrasses contributes substantially to soil improvement through organic matter additions from decomposing roots and underground stems, that have an estimated turnover rate of 42%. For a turfgrass, 66% of the annual net productivity in plant biomass is below ground (Falk, 1967). Thus, turfs function in carbon storage via conversion of carbon dioxide emissions to soil organic matter. They also serve a vital function in the restoration of environmentally damaged lands.

Organic Chemical and Pesticide Degradation. Turfgrasses have a unique, fibrous root system that is continually being replaced. The resultant dynamic root decomposition process supports a large, diverse population of soil micro-flora and micro-fauna. Compared to grassland, the average microbial biomass is 42% less for cropland and 29% less for forests. These measurements were made on unirrigated grasslands, thus many irrigated turfgrass areas would have microbial populations that are even larger. The turfgrass-soil ecosystem with its large microorganism population offers one of the most active biological systems for degradation of trapped organic chemicals and pesticides, thereby functioning in the protection of ground water quality.

Enhanced Heat Dissipation. The transpirational cooling capabilities of turfs have a significant impact on the urban microenvironment. Urban areas tend to be 10 to 12°F (4.6-6.7°C) warmer than adjacent rural areas. Thus, a higher percentage of turfgrass areas in urban communities relative to impermeable surfaces reduces this heat island effect. These transpirational cooling effects on the microenvironment strongly buffer the potential heat stress effects to humans participating in sports and recreation on turfed surfaces when compared to the alternatives.

Type of Surface	Maximum Temperature °F (C)	Percent Temperature Increase Compared to Green Turf
Green growing turf	88 (31)	--
Dry, bare soil	102 (39)	16
Brown, dormant turf	126 (52)	43
Synthetic turf	148 (70)	80

Reduction in Noise and Glare. Significant noise abatement can be achieved through the use of turfgrasses. For example, a 4-inch (100 mm) high turfgrass canopy along a road abates vehicle noise levels by 40% in a distance of 70 feet (21.3 m) (Cook, et. al., 1971). This noise abatement is further accentuated by a combination of turfs, trees, and shrubs. By the same token, the multi-directional reflection of turfgrasses significantly reduces the discomfort of visual glare effects on the human eye.

Decreased Noxious Pests and Allergy Related Pollens. Mowed turfgrasses surrounding residences and buildings reduce the natural habitat for certain undesirable animals, such as snakes, rats, and mice as well as insects, such as mosquitos, chiggers, and ticks (Clopton and Gold, 1992). The latter are particularly significant in the spread of Lyme disease. Finally, numerous allergy related pollens produced by dicotyledonous plants are reduced significantly in mowed turf areas.

Reduced Fire Hazard and Enhanced Security. The living green space of irrigated turf on parks, golf courses, and residential lawns provides a

significant green space of low fuel value that is vital as a fire break, particularly in areas that are subject to extended summer droughts (Youngner, 1970). Also, mowed turfs provide a high visibility zone that restricts the activities of unwanted intruders.

Wildlife Habitat. A diverse range and a large number of wildlife are supported by the integrated landscape of grasses, trees, shrubs, and water features commonly found on over 66% of a typical golf course area and in parks. Studies by scientists conducted on the municipal golf courses in the Cincinnati, Ohio area led to the conclusion that golf courses may be described as bird sanctuaries, especially when compared to the surrounding urban and intensive agricultural uses (Andrew, 1987).

Recreational Benefits. Turfgrasses enhance the physical health of sports and recreational participants. Over 24 million golfers play 500 million rounds of golf on more than 15,000 golf courses in the United States. This represents 2.4 billion hours of healthy outdoor recreation. As golf courses represent less than 4% of the turf facilities, the total recreational activities provided by turfs is many times greater. Turfs also provide a resilient cushion that minimizes injuries.

Ornamental Benefits. Turfgrasses provide beauty and aesthetic benefits that are difficult to quantitatively measure. In 1971 Harris-Life survey 95% of the respondents reported one of the things they wanted most around them was "green grass and trees." Golf courses help satisfy this human need. There also are the benefits derived from improved mental health, social harmony, and work productivity (Ulrich, 1984). How we use vegetation in our surroundings is basic to social stability and harmony, particularly in urban areas. Ugliness is costly! Cities can be dismal without green turfs in parks, along streets, surroundings homes, and on golf courses. If we fail to provide representative amounts of turf in urban communities, there tends to be a loss of human productivity and greater susceptibility to anxieties that may lead to mental diseases. The clean, cool, green of turfs provides a pleasant environment in which to live, work, and play. Such aesthetic values are increasingly important to the dignity of the human spirit and to mental health, especially for urban residents.

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Note: This article is adapted from an article under the authorship of James B. Beard and Robert L. Green that was published in the Green Section Record in 1993. Also, a comprehensive scientific paper, on which this article is based, is scheduled to be published in the Journal of Environmental Quality.