

# TRENDS IN SPORTS TURF

by Michael J. Bladon

Athletic fields comprise the most observed turf in the world. Millions watch major sports world wide, thousands observe games at the local level including university, college and high schools. There is extensive coverage on TV of every conceivable sport. Newspapers reserve several pages for it, there are many sports magazines and radio and TV give us reports hourly as part of the news.

Since time began games involving body contact have received the plaudits of our world. They provide an outlet for a competitive and aggressive society and are in themselves therapeutic. They challenge a player's skill, conditioning and training.

This article will address the trends in Sports Turf today as they relate to Canada and the U.S. These trends are many and varied. The first and most significant is the tend to technical information, with particular emphasis on high quality sports turf and on how to construct and maintain the various athletic fields. It is found in technical publications, turf magazines, and at seminars, field days and conferences. At turf conferences now, sessions are held specifically related to sports field problems.

## VIDEOTAPES

Increasing use of videotapes for inservice training sessions provides up to date information to the sports turf manager on maintenance and renovation practices. In addition, they are used at trade shows to portray equipment use and new equipment ideas, and to show materials and construction techniques related to drainage and irrigation.

## SPORTS TURF ASSOCIATIONS

Another direction is the formation of Sports Turf Associations. A group in the U.S. started the Sports Turf Managers Association in 1981. Its membership is now 700 strong. Two years ago the National Sports Turf Council was launched to co-ordinate the efforts of national experts to help develop top quality sports turf.

A similar organization in Canada is the Sports Turf Association. Conceived during a brainstorming session in February of 1987 at the University of Guelph, Arboretum, this association now has a membership of 80 and growing daily. These members are from virtually every province in Canada and include School Boards, Municipalities, Universities, Community Colleges, Private Schools, Manufacturers and Distributors of turf-related products.

The objective of the Association is to collect and disseminate scientific, educational and practical knowledge through liaison with those people involved with the construction and maintenance of safer and better sports turf. Its members represent a wide range of sports, including field hockey, football, soccer, baseball, softball, slo pitch, cricket, lawn bowling and horse race tracks.

The aims of the Sports Turf Association are to co-operate with and aid existing organizations which have an interest in the improvement of athletic fields. In 1988 the Sports Turf Association held their first annual Sports Turf Conference in conjunction with the Canadian Golf Superintendents Associ-

ation and had 100 people in attendance. Each year field days are held in different locations using knowledgeable speakers from Canada and the U.S., followed by hands-on equipment demonstrations and tours.

The Association has published in its newsletter several field maintenance guidelines for different sports. It also plans the publication of a guide to "Construction and Maintenance of Athletic Fields" in the spring of 1989. This will be one of the few publications at this time on sports turf that relate to Canadian conditions. In the same area of educational material the Association hopes to produce the first of several instructional videotapes. These will address the maintenance functions associated with sports fields.

The second most important trend in sports turf today is in the advances in Turf Management. Research was needed, and is still needed, because of the "overuse" problem associated with athletic fields. This is due to increased leisure time and escalating land prices. So we are seeing increased work in the breeding of turf grass cultivars which have potential for sports fields and a change in the equipment available for maintenance and renovation practices.

## EQUIPMENT:

The direction for equipment manufacturers has been the improvement of existing designs. This has resulted in larger, wider, more reliable machinery with multi-faceted uses. The individual can now buy aerifiers, overseeders, topdressers, grounds groomers, vacuums and dethatching units. These pieces of equipment, because of their size and versatility, mean a considerable drop in labour costs associated with maintenance and renovation. In the case of mowing equipment, because it is much lighter, compaction problems are lessened.

contact, hence germination results are improved. Topdressers can now be calibrated so the sports field manager can calculate with more accuracy his or her topdressing requirements for a given area. 3 5 gang thatching units can now be utilized for thatch removal.

There are also a great many different aerification units on the market from Europe, Canada and the U.S. to counteract your compaction difficulties. Your selection should consider whether drum or cam type, local soil conditions, tine durability, high maintenance, downtime as it relates to loading and unloading, and transport over curbs. Hydraulically driven reel mowers, while more expensive to maintain, in conjunction with diesel and water cooled engines, are finding increasing favour with grounds maintenance personnel.

## COMPUTERS:

There is a growing inclination towards automatic sprinkler systems in combination with moisture sensors. These aid the sports field operator to apply water based on soil moisture levels, climatic differences, or the needs of specific turf grasses. These systems not only take the guesswork out of irrigation but also use water more efficiently. Computers speed up inventories and may be used to measure maintenance costs. For the groundskeeper, their uses appear endless.

## **TURFGRASSES:**

The development of Merion Kentucky Bluegrass in the 1950's showed scientists and plant breeders that breeding improvements were possible in grasses. Today, millions of dollars are spent in this area. The result is there are a large number of varieties of all grass species that can be used in blends and mixtures. All of these bring different and useful strengths to the sports field manager. Contributions of Kentucky bluegrass in mixtures are:

- Rhizomes — sod strength - recovery**
- Increased disease resistance to snow mold, brown patch and Pythium**
- Less mowing**
- They exhibit good cold tolerance — winter hardy**
- High visual quality**
- Many seeds per pound**

The turf type perennial ryegrass were non-existent prior to the introduction of Manhattan in 1967, as the first improved turf type perennial ryegrass. Due to recurrent selection of this species which is cross pollinated, scientists have been able to increase its disease resistance. So the contribution of perennial ryegrass to mixtures are:

- Quick establishment**
- Tolerance to high traffic and compaction**
- Wide soil adaptation**
- Tolerance to close mowing**
- Competes with weeds**
- Deeper roots and no thatch**

The tall fescues also provide an important offering to seed mixtures:

- Drought tolerance**
- Wide soil adaptation**
- Lower fertility needs**
- Heat, traffic and disease tolerance**
- Shade tolerance**
- No thatch**

While not an easy process the sports turf manager using Kentucky Bluegrass varieties, the mainstay of our northern climate, now has some choices. He or she in co-operation with seed companies, turf grass specialists and the Guelph Turfgrass Institute can keep up with current research and information. There is a definite trend toward sports turf mixtures to withstand heavy use.

Although not a new idea, there is a leaning towards pre-germination of seed (long used in the vegetable industry). In combination with irrigation it speeds renovation of areas. The seed is soaked for several days in drums or on a piece of plywood in an area where the temperature and light are constant 22°C (70°F). The seed is then mixed with a carrier such as sand or vermiculite, placed in a slit seeder and applied where needed. It is very important not to bring the seed too far along, as damage can occur to the emerging root radicle, and to ensure seeder openings are increased to compensate for the seed swelling. George Toma of the Kansas City Chiefs has used this method on occasions where a big game was involved and in combination with a perforated plastic cover. This simulates a greenhouse environment and enables him to cut the new grass in ten days.

## **GEOTEXTILES:**

Much greater use of these polyester materials where larger, heavier canvas tarpaulins used to be in vogue. They are used to cover fields to cut down on wear or damage from concerts, marching bands, and the problems related to

desiccation of the grass plant. Bench tarps of the same material practically eliminate the wear from a football team congregating in one area for an entire game (we use them at the University of Guelph). Here to stay, they are light and easy to handle unless it rains, at which point they become heavy and difficult to clean and dry.

## **MESH ELEMENTS:**

The addition of randomly oriented interlocking mesh elements to granular soil has shown initially: (1) substantial benefits to turfgrass rootzone and stability, and (2) enhanced turf growth. The mesh element matrices have a positive effect on soil aeration porosity which is important for root growth needed to intertwine with the mesh to achieve maximum turf stabilization. The mesh elements were provided by Netlon Limited in England. The results of the American research in this area are to be published soon.

Potential applications include sports fields, horse race tracks, car parks, golf cart paths and roadways grassed and used by vehicle and foot traffic. The use of these elements is one of the most promising approaches to provision of a stable uniform playing surface, under various weather conditions. It retains the cushioning effect of a turf, the stabilizing effects of an artificial turf, but retains the beneficial dimensions of a natural grass.

Liability is becoming an increasing problem. In the future, it is possible insurance companies may offer lower rates for fields that are properly constructed and maintained. As Dr. Eliot Roberts (Director of the Lawn Institute) stated in the American Lawn Applicator's October publication, "there is no longer an excuse for negligence in the culture of natural grass for sports playing surfaces". He adds that while costs will vary considerably from location to location, and are dependent on work done, the economics of sports field construction and maintenance or renovation is more favorable than the economics of compensation for injuries to young athletes. Sports turf managers would do well to check their fields daily, to ensure they are safe.

Dr. Kent Kurtz said that "the sports turf industry has never fully recovered from the 'wonder rug'." With some of the trends mentioned here we could well start closing the gap. Due to the number of injuries on artificial turf, professional sports teams are going back to natural grass. E.G. Soldier Field in Chicago, Mile High Stadium in Denver has natural grass with soil heating cables under the surface. Given a choice, athletes would prefer to play on natural grass. They practice on it all the time.

The future looks bright for those involved in safer sports turf in Canada. Indications are the sport turf manager will be better educated, better compensated, and more highly respected for their role in this most important of vocations.

As stated in a Royal Bank newsletter titled 'Building and Keeping Quality', "there is nothing quaint and old world about love of quality and the desire for excellence".

The most dramatic change in Canada is perhaps the trend toward the use of sand as a rootzone material in the construction of sportfields. Started in the late 60's and early 70's, more and more park systems and school boards are using this approach. The most notable is the P.A.T. system, Prescription Athletic Turf developed at Purdue University by Dr. William Daniel and Associates. Others include Sportsturf Systems, The Cell system, and slightly different, The Cambridge System. The latter system involves cutting slits to a depth of six to eight inches and then incorporating sand.

The type of sand used is the key to these fields, and

much work has gone into research. A sand in the medium particle range appears to be the best. Economics dictate the depth of any imported sand. Most of the systems mentioned earlier make use of an underground system of piping below the rootzone and attached to extraction pumps. The water may be removed to holding tanks to drain the field or reversed to supply water or fertilizer in combination through the irrigation system.

The advantage of the sand field is that a crown is not required. An 18-24" crown was used as a standard procedure in football field construction to remove surface water. Therefore a sand football field, if properly constructed and maintained, will move water through its profile faster than irrigation or rain can apply it. This is beneficial because the field can be used for other sports where a crown is undesirable (soccer or field hockey).

The challenges of this trend in field construction are the different nutrition and irrigation regimes. Nutrition studies on many sands indicated that nitrogen, phosphorus, and sulphur were always deficient. While you can't manage sand fields like soil fields, they can be managed, e.g. fields in North York, Vaughan and Mississauga, Ontario.

The sand football field responds to many of the difficult problems associated with the high use football and soccer fields. Overuse still causes wear damage to the sod but even

in wet weather, good footing makes the field playable. The sportsfield manager does not have to wait for the field to dry out in order to carry through with his maintenance program.

#### CHEMICALS AND FERTILIZERS

The leaning here is toward fertilizers which will release nutrients uniformly over several months, rather than the water soluble types which leach more readily.

New, improved herbicides, fungicides, and insecticides, with lower mammalian toxicity, reduced eye and skin effects, lack of odour, use of more water soluble packets instead of emulsifiable concentrate formulations for less waste. Finally more biological controls including a natural fungus that kills dandelions, developed by Dr. Lee Burpee of the University of Guelph. Considerable government and private interest has been shown in this research. The chemicals above are being evaluated for broader spectrum systemic qualities, in a trend towards integrated pest control.

Although the Sports Turf Association is Ontario based, membership is available to anyone in the turf industry in Canada who is interested. If you require more information please contact: Michael J. Bladon, Sports Turf Association, 185 Edinburgh Road South, Guelph, Ontario, N1G 2H8. Phone: (519) 824-4120, ext. 3460.

## BEAT NEGLECT ON THE PLAYING FIELD

### GROUNDS CARE MUST STRESS PREVENTION – OR YOU'LL PAY DOUBLE LATER

by Kent W. Kurtz, Ph.D.

Almost every child has developed motor skills, coordination and philosophies — and experienced "the thrill of victory and the agony of defeat" — on the school playground or athletic field. Since the formative years are the most important in a child's development, the playground and athletic field during these years are very crucial to the child's future and an integral part of the child's success.

If the playground and sports fields are so vital to our students' educations, why then are we so careless with them? Take a close look at the playgrounds, parks, ball fields and sports facilities in your community — are they safe? Unfortunately, the vast majority show deterioration, neglect and worn-out turf. Many of these facilities are hard, compacted, dangerous and very unsafe. Holes, depressions, litter, debris, glass, metal and other hazards are far too abundant.

The problems are most often the direct result of poor or faulty construction, shortcuts, politically motivated change orders, shortsightedness, a lack of knowledge or funds, or the implementation of the wrong priorities by misinformed administrators or novices. It doesn't make sense: decisions are made to save money and costs initially, but then we pay later with higher maintenance costs in order to try to rectify the condition.

Many public agencies and schools find themselves in trouble from the outset because of the low-bid process in awarding contracts. It is a fact that most contractors have no background or experience with the proper construction and/or maintenance of athletic fields and they really don't have time to learn. They lack the expertise and knowledge of soils, soil management, and soil modification, proper drainage and surface uniformity, water infiltration rates, use and compaction requirements and the proper turfgrasses to use for heavy



wear and tear. The bottom line when the low-bid contractor is selected, in most instances, is a very expensive ongoing maintenance program.

Problems that are directly attributed to the construction phase are most often soil-related. The playgrounds and athletic fields that exhibit poor drainage and severe compaction problems are normally due to poor soil preparation during