

UNDERSTANDING TURF MANAGEMENT

BLUEGRASSES

The 16th in a series by
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The grass species most common to the cool season, sub-humid to arid climates of Canada for sports turf is Kentucky bluegrass.

Kentucky bluegrass was introduced into North America from Europe by the early settlers, probably as livestock feed during the ocean voyage or as mattress padding. The origin of the name "Kentucky" is probably from Kentucky where seed was first harvested from pasture stands. It may also be due to the species preference for medium textured soils formed from the degradation of limestone, thus having a relatively high phosphorus level; features of the soils of the state of Kentucky.

The Bluegrass Family

Of the more than 200 *Poa* species in the world, there are only five bluegrass or *Poa* species which are commonly found in turf. While Kentucky bluegrass (*Poa pratensis* L.) is the most important and desirable species, a second species, Canada bluegrass or *Poa compressa* L., finds use in restoration of droughty, low fertility areas. It forms an open, stemy turf which lacks the strong, rhizomatous nature of Kentucky bluegrass. As a result it is of little value for sports fields.

Rough bluegrass, *Poa trivialis* L., is a stoloniferous species which also has limited use because it lacks heat and drought tolerance, turning brown during midsummer stress periods. The above ground stolons do not provide the wear resistance of Kentucky bluegrass. It does, however, have excellent cold tolerance making it worthy of consideration in areas where winter survival of Kentucky bluegrass is a problem.

The renegade of the bluegrass species is the widely distributed annual bluegrass, *Poa annua* L. This species is commonly considered a weed grass due to its low tolerance to wear, heat, drought and cold stress. The species is a prolific seed producer, particularly during the cool, moist spring, and spreads by the seed carried on mowing equipment and footwear. As many as 72 viable seeds per square inch have been reported in golf greens. The seeds do not have a dormancy period, thus they may germinate as soon as they hit the

soil surface. *Poa annua* also spreads by stolons and is shallow rooted, factors which reduce its wear tolerance on sports fields.

The fifth species of bluegrass is a recent introduction from Europe, *Poa sapina* Schrad. It appears to be related to annual bluegrass and has received considerable attention in Europe for sports fields. Initial information on the species indicates that while slow to develop during the seedling year it becomes quite aggressive in later years. Its aggressiveness is in part due to heavy seed production and early season growth. At the same time it is reported to prevent or inhibit the spread of annual bluegrass when managed with high nitrogen and water.

Kentucky Bluegrass Advantages

The most significant advantage of Kentucky bluegrass for sports fields is that in addition to normal tiller formation it has the ability to spread by means of rhizomes from which new plants develop to colonize bare areas, giving it great recuperative potential. Thus under good growing conditions the stand heals rapidly following injury. The interlocking network of rhizomes and roots within the soil, rather than above the soil surface as is the case with stolon forming *Poa* species, also enhances the wear resistance of Kentucky bluegrass.

It has been estimated that a single Kentucky bluegrass plant can produce 20 to 60 feet of rhizomes from the original shoot between mid-June and mid-November. Each node on the rhizome is capable of initiating a new shoot and root system. It is this rhizome system which makes Kentucky bluegrass the preferred species for sports fields.

Additional advantages of Kentucky bluegrass are that it performs well under a wide variety of soil conditions, showing good heat and drought tolerance and that it is winter hardy. Under high temperatures and/or water restrictions, however, Kentucky bluegrass will enter a period of slow growth, often referred to as summer dormancy. With the return of fall rains the turf will resume normal growth in about three weeks.

The optimum temperature for top growth is 21 - 24°C, and 15°C for root growth. Root growth may continue below 4.5°C, a factor favouring nitrogen uptake from late fall fertilization. It is interesting to note that higher temperatures stimulate the emergence above the soil surface of growing points of new tillers from nodes on rhizomes whereas lower temperatures enhance the elongation of the rhizome.

Kentucky bluegrass has a medium tolerance to low soil oxygen levels which may be caused by poor drainage or compaction. It is a salt sensitive grass as conductivities due to salts in excess of 4 millimhos are known to be harmful. It prefers a pH in the range of 6.0 to 7.0 but will grow very satisfactorily at pH 7.5 which exists on many of our sports fields in Canada.

Kentucky Bluegrass Disadvantages

Kentucky bluegrass is slow to germinate, generally requiring two to three weeks to emerge. Its use for the quick repair of sports field turf, therefore, is limited. Light is required for germination of all bluegrass species. Although the intensity of light is very low, seed buried below 2 - 5 mm may never emerge.

In a rating of shade tolerance bluegrass must be rated as poor in relationship to perennial ryegrass, bentgrass and fine fescues. When the shade is caused by trees the problem of shade tolerance is compounded by the demand of the tree for water and nutrients.

Ice damage is a problem throughout Canada. Kentucky bluegrass is intermediate between bentgrass and annual bluegrass in its tolerance to ice sheet injury with bentgrass being the most tolerant. Kentucky bluegrass will tolerate up to 50 days of ice cover (skating rinks) without damage if adequate drainage exists to remove water formed during thaws. A snow layer between the ice and the turf significantly reduces the ice damage. Frost heaving may be a serious problem for late fall seeded bluegrass. Again the corrective measure is good drainage.

Kentucky bluegrass is a relatively heavy thatch former. While thatch adds resil-

iciency to turf, excessive thatch contributes to disease problems. Topdressing or coring practices may have to be considered for those areas of the field where play is not intense.

Cultural Practices

The recommended seeding rate for Kentucky bluegrass is 1.0 - 2.0 kg/100 m². This seeding rate will provide 4.8 to 9.6 million seeds per 100 m²; about 5 seeds per square centimetre.

There are over three dozen cultivars of Kentucky bluegrass available for use in Canada (see Sports Turf Manager, Vol. 8, March, 1995). Generally a blend of two or more cultivars is preferred to capitalize on the slightly different attributes of each individual cultivar.

Kentucky bluegrass is responsive to phosphorus fertilization, particularly during the establishment period. A high rating on the soil test is desirable during this period. Where this initial high level of phosphorus fertility is achieved and clippings are not removed minimal phosphorus fertilization may be required in future years.

Kentucky bluegrass has a medium demand for nitrogen fertilization. Generally .25 to .75 kg N/100 m² per growing month is required for good growth, however these rates should be adjusted according to the sports turf managers experience in the colour and density he achieves from nitrogen. Potassium should be applied according to the rate suggested by a soil test. Alternatively a rough guideline is one kg of K₂O for every two kg of nitrogen.

Disease on sports field turf is generally not a problem. Helminthosporium leaf spot, Fusarium patch (pink snow mold) and Typhula blight (grey snow mold) may be a problem under some conditions but chemical treatment is seldom necessary.

In recent years grub damage to sports fields from chinch bug and European chafer has become a problem in Ontario and Quebec. The insects damage the root system drastically which reduces the wear resistance of the turf. Where the grub population warrants chemical control is necessary.

The optimum cutting height for Kentucky bluegrass is one to two inches with the higher height preferred for sports fields. Cultivars have been developed for lower mowing heights for use on golf fairways but greater wear tolerance has not been shown to be associated with the lower mowing height.

Bench Tarps Will Help You

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A few years ago we had just finished sodding the bench areas in Gryphon Stadium at the University of Guelph when I happened to read an article on Sports Turf and saw an advertisement for geotextile Ground Blankets or Bench Tarps.

They seemed to be the answer to one of our maintenance problems. Each year we found people were wanting to get on the field earlier in the spring. At a time when we were trying to refurbish the fields, the new, young tissue and the crown were being destroyed in the high traffic areas around the bench. Hence we had a yearly resodding job to do. Sodding was an automatic \$2,400 expenditure, just for the sod. This compared to the tarps which today would cost \$ 560.00 each, plus freight.

We decided to purchase two tarps from Warren's Turf Nursery of Indianapolis. The tarps measured 15 ft wide by 75 ft long and weighed approximately 150 lb each. They are easily transported in a pick-up truck, or if you have one, by a forklift. The tarps have the leading edge (75 ft) and sides stabilized with a 2-inch wide, polypropylene reinforcement tape. This is chain-lock stitched to the fabric, with brass tooth grommets installed every three feet along the front and sides. The tarp is a light green in colour and the tape a darker green.

On the day of the game, the tarps are removed from storage, placed on a pickup or forklift and dropped off at the edge of the field. They are then unrolled in the bench area and spiked down using 6-inch "7" shaped spikes. The spikes are placed down three sides of the tarp and the players benches are placed along the back length to hold that edge down.

The tarps are removed after the Saturday game. This is very necessary, especially if rain is expected because the tarps become not only heavier to lift, but also because of

their size, are very difficult to dry. It is also considered advisable in to remove the tarp no later than the morning after the game in order to maintain turf colour. The grass should be cut before the installation of the tarp. With freshly cut grass, once the tarp is removed it was found the grass will recover more quickly from both the weight of the tarp and foot traffic on the tarp.

Routine maintenance is minimal. The tarps are 100% polyester and very, very tough and durable. We lay them out on asphalt under our stadium to clean where they are broomed off and hung to dry, if necessary. Although not extremely heavy, they are very awkward to handle. At seasons end we have our Housekeeping Department steam clean them so that they look practically new again. They can also be washed with soap and water. They are placed in an unheated area for storage, summer and winter, with no adverse effects.

The application of pesticides or fertilizers just prior to putting the tarp down is a no-no!

I would recommend these tarps to anyone whose fields get continuous heavy wear. It may be used on soccer or football fields and on baseball diamonds to cover areas for batting practice.

Two companies that I am aware of that sell these blankets are - Warren's Turf Nursery, Inc. out of Indianapolis, Ind. and Covermaster, Inc. in Rexdale, Ontario. The material is available in different lengths and widths.

If you wish to save time and money on maintenance I would suggest you consider purchasing these tarps. Even if you have artificial turf (heaven forbid), they will prevent wear in a heavy use area. Try them, you will like them.

A POINT OF VIEW

Weeds in a lawn are not the problem. The problem really is that the grass isn't dense enough to crowd out and keep out the weeds. Proper mowing, watering and fertilization will thicken the grass to a point where herbicides are rarely required for a weed-free lawn.

