

UNDERSTANDING TURF MANAGEMENT

THE BENTGRASSES

The 19th in a series by
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Bentgrasses are the preferred turf species where true ball roll is the top priority for the turf surface.

The bentgrasses are of minor importance in sports field use, nevertheless those involved in maintenance of bowling greens, grass tennis courts and municipal golf courses will be interested in the use of this species. The bentgrasses originated in Europe and were introduced to North America during colonial times. Today they are found wherever there are golf greens in the cool, temperate climates.

The Bentgrass Family

Although there are at least 100 species of grasses listed in the genus *Agrostis* there are only four species of bentgrass used in the turf industry. The most common is creeping bentgrass (*Agrostis palustris* Huds or *A. stolonifera*). The others are red top (*Agrostis alba* L.), velvet bentgrass (*Agrostis canina* L.) and Colonial bentgrass (*Agrostis tenuis* Sibth.). The latter is also known as browntop in the U.K. and New Zealand.

Except red top, the bentgrasses are used for intensively managed areas where dense surfaces are required. Due to the predominate prostrate growth habit, the bentgrasses are the most tolerant of the cool season grasses to continued close mowing, often as low as 0.2 inches. Under this mowing regime the bentgrasses can form a fine textured, dense, uniform, high quality turf, ideally suited for true ball roll on golf and bowling greens.

All of the bentgrasses are characterized by being fine leaved, cool-season, perennial species. Colonial bentgrass and red top are primarily rhizomatous species,

that is, they spread by means of underground stems. In contrast velvet bent and creeping bentgrass are stoloniferous species that have horizontal stems creeping above the soil surface.

The species are generally propagated by seed, however, vegetative propagation is feasible. As a result Toronto C-15, which originated at the Toronto Golf Club in Long Branch and became very popular throughout the North East and Mid Western U.S., was propagated by stolons or sod moved to new golf greens. The more disease resistant varieties available today are all propagated by seed. The standard variety of creeping bentgrass, against which all other improved varieties are rated today, is Penncross that was released by Penn State University in 1954.

Bentgrass Advantages

As intimated above the main advantage of the bentgrasses is their ability to maintain a dense turf under very low mowing heights. The advantage arises from the very short lower internodes. Creeping bentgrass is the superior species in this regard where mowing heights of 0.2 inches or less are required. Colonial bent is less tolerant to low mowing heights and tends to eventually form a mottled, patchy appearance due to segregation into off-type clones. Velvet bent also is less desirable for use at low mowing situations due to heavy thatch formation and the resulting scalping that may occur. The heavy thatch accumulation is due to a relatively slow rate of decomposition of root and stolon material. Colonial bent also has thatch accumulation problems requiring more frequent topdressing than creeping bent grass.

A second, related advantage is the recuperative ability from injury. The recupera-

tive ability of the species of bent is largely related to their means of spreading. Creeping bent has the most vigorous stolon system, hence the most rapid recovery from divots or bare areas caused by disease or winter injury. On the other hand colonial bent and velvet bent spread by rhizomes or short, slow-growing stolons, whereas red top has rhizomes only, giving them slow recuperative ability.

A third advantage of the bent grasses is their tolerance to winter injury. Creeping bentgrass is one of the most winter hardy of the cool season turf species. Colonial bent has slightly less cold tolerance and red top has even less tolerance; to the degree it is sometimes considered a short-lived perennial.

The bentgrasses are also reported to have good tolerance to poor soil conditions, low pH soils, having drought tolerance and being tolerant of poor fertility. While these attributes may be true, optimum performance of the species only occurs where drainage, water, and fertility are enhanced.

Red top's adaptation to coarse textured, low fertility conditions gives the species a niche in the low maintenance and erosion control situations. The reddish hue of the inflorescence provides an added aesthetic appeal.

Bentgrass Disadvantages

The bentgrasses tend to be very prone to disease - *Fusarium* patch, *Sclerotinia* dollar spot, *Helminthosporium* and many others - such that a preventive fungicide program is often used when disease problems are anticipated. Recognition of the particular disease and its control requires a high degree of management skills and costly chemicals.

Bentgrasses

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Creeping bentgrass, and to a lesser degree colonial bentgrass, have little tolerance to compaction that is often a problem on greens. Furthermore the rooting system tends to be shallow and lacks the toughness required to withstand the tearing action of the player's cleats.

Water stress may be a problem where bentgrasses are produced on freely draining, coarse textured rooting zones. The irrigation demand arises from the relatively shallow root system of the bentgrasses. While creeping and colonial bentgrasses have a medium to good level of heat tolerance, mid day syringing is often necessary under conditions of high evapotranspiration.

Creeping bentgrass and colonial bentgrass are subject to root injury from phenoxy herbicides such as 2,4-D.

Creeping bentgrass, colonial bentgrass and red top have low to medium shade tolerance but velvet bentgrass can be grown in partial shade.

Cultural Practices

When used on a playing surface the bentgrasses demand a relatively high fertility level, particularly nitrogen. Yearly applications of up to 400 kg N/ha, split into 6 to 8 applications may be required. Consideration should be given to using at least 50% of the nitrogen as a slow release carrier to avoid foliar burn. Uneven coverage may result in a "freckling" of the turf. Higher levels of phosphorus and potassium are required than for normal sports fields.

Mowing bentgrass is a daily operation. The low mowing height requires a special greens mower which should be well maintained and sharp. The greens mower should be equipped with a comb to prevent grain from developing in the turf which will influence the ball roll. Grain may also be avoided by alternating the direction of mowing.

Topdressing for thatch control and to level the surface is an important practice on bentgrass. At the low cutting height used on bentgrass thatch accumulation may result in unsightly scalping



that will also distract from a true ball roll.

Verticutting may also be used for thatch control. In addition vertical mowing cuts the stolons, thus promoting juvenile shoot development and rooting at the nodes on the stolons.

Compaction control is essential for good growth of creeping bentgrass. The problem arises where greens are constructed from local soils or where specifications for materials selection for USGA type greens are not followed. Hollow tyne aeration with topdressing will not only relieve the compaction problem, but will also provide thatch control.

The GTI Advisor



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