TURFGRASS TRENDS

BENTGRASS EVOLUTION

Bentgrass Cultivars Outgrow Some Pests

By Cale A. Bigelow

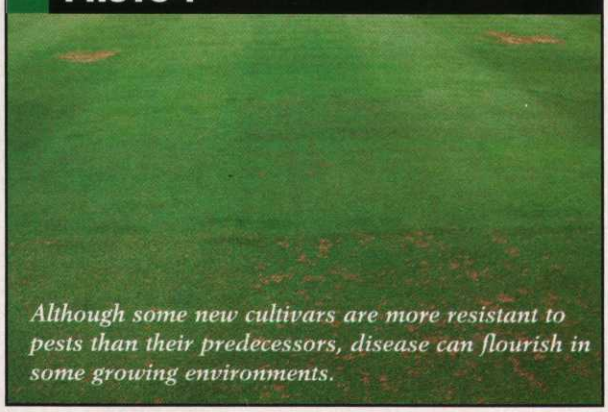
In the early days of golf course construction in the United States, putting greens were originally planted as a species mixture that contained a combination of creeping, colonial and velvet bentgrass referred to as South German bentgrass. This mixture was suitable for putting greens because it tolerated the mowing heights of the time and most importantly was widely available.

As management intensity increased, it became clear that creeping bentgrass was the most suitable species for putting greens because it formed the most persistent and reliable turf. Many early putting greens were established with stolons in a process called stolonizing. The availability of high-quality stolons and stolon storage and transport fueled the demand for a high-quality seeded bentgrass. An early seeded bentgrass eventually became available and was known as Seaside. Like the South German bentgrass mixture, this cultivar was prone to severe segregation or a patchy appearance over time. Seaside also possessed a very coarse leaf texture and was prone to severe grain development.

As the game of golf grew dramatically during the post-World War II era, the majority of golf course putting greens were planted using an emerging generation of seeded bentgrass called Penncross. This cultivar was more attractive than Seaside, segregated less and was highly prized because of its adaptation to a wide range of environmental conditions and its resistance to several problem diseases, including dollar spot and brown patch.

Further cultivar improvements continued to include some familiar varieties. In the 1970s, Penneagle was introduced, and in the 1980s Pennlinks, Providence and several others were introduced.

PHOTO 1



Although some new cultivars are more resistant to pests than their predecessors, disease can flourish in some growing environments.

Much has changed since the golden age of golf course construction. And during the past 20 years, golfers have expected and demanded the firmest, smoothest putting surfaces. Golf course managers have responded by modifying their putting green management practices.

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The primary changes to putting green culture have been focused on the quest for consistent, fast ball speeds. To achieve this goal, daily mowing heights are much lower (the industry standard appears to be no greater than one-eighth inch). Fertilizer and irrigation are highly regulated, and there is a trend toward more frequent (weekly) sand topdressing.

Not surprisingly, with less fertilizer, drier soil conditions and the added stress of close, frequent mowing, diseases like dollar spot are reported to be a serious challenge.

It is said that "necessity is the mother of invention" and turfgrass breeders have responded to the golf course managers' needs by breeding bentgrasses with more upright growth habits (prone to less grain), finer leaf texture, an ability to maintain shoot density at extremely low mowing heights, increased rooting depths and a greater focus on disease resistance even when managed with very little fertilizer.

Interestingly, most of the newer cultivars have been bred from selections that developed on putting greens that were originally planted to Penncross, which means the genetic diversity among modern cultivars is not very high. In the mid-1990s, the golf construction industry was extremely busy opening approximately 300 courses per year. Concurrent with this construction boom many putting greens were established using the new standards for bentgrass, such as Crenshaw, Pennlinks, Putter, L-93, Southshore, and several of the emerging Penn A- and G-series bentgrasses. Probably the most widely planted bentgrass on putting greens in the cool-humid region was Penn A-4 or a blend of A-1 and A-4.

For the past decade this cultivar has a good track record at many of the finest golf facilities. While this most recent generation of cultivars has provided superior visual and functional characteristics, some possible negative attributes have also been reported, including reduced lateral spread due to a more compact and upright growth habit that sometimes results in slower ball-mark healing. Other reported attributes include greater susceptibility to diseases like dollar spot, and a general perceived requirement for increased cultural inputs, such as more-frequent, ultra-low mowing, increased core cultivation and sand topdressing needs in order to manage potential surface organic matter accumulation associated with the new high shoot densities (Samples and Stone, 1994; Landry, et al. 1997; Morris, 1998; Bruneau et al., 2001).

One example of unexpected management challenges with the newer cultivars is that during the mid-1990s many new putting greens were established to the newest heat-tolerant bentgrass, Crenshaw. This cultivar was widely planted throughout the Southeastern United States where prolonged hot, humid summer conditions are the norm. Overall this cultivar has performed very well at many golf facilities throughout the Carolinas.

Although this cultivar has excellent heat tolerance and summer performance, its Achilles heal has been its susceptibility to dollar spot. It is one of the least resistant, making preventive fungicide sprays a necessity. In addition, golf course managers that pushed the cultivar farther north into the mid-Atlantic often complain of the lack of spring vigor. This example illustrates how a good cultivar (perhaps simply planted in the wrong growing environment, a humid one rather than an arid one such as the area in which it was bred) can present new management challenges, which should be kept in mind as the profession begins to consider the newest bentgrass generation.

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