Velvet Bentgrass And Sustainable Golf?

Variety may be environmentally friendly without diminishing quality of the golf experience *By John Stier*

Tough economic times and increasing environmental regulations are causing golf course superintendents to look for more sustainable management practices. Part of the answer may lie in using grasses that require less inputs.

Virtually all of today's superintendents and golfers are familiar with only two types of putting green grasses: creeping bentgrass, which is considered desirable, and annual bluegrass (*Poa annua)*, which is often considered to be a weed except in the Pacific Northwest. However, as Americans look to develop more sustainable cropping systems, sometimes they are finding that older types of plants may provide the desired sustainability characteristics. This may be a very pertinent point with regards to bentgrasses, as creeping bentgrass cultivar development has relied on ready access to fertilizer, pesticides and water.

The extremely fine-leaf texture of velvet bentgrass is one of the first characteristics people notice about velvet bentgrasses. This characteristic once made velvet bentgrass a preferred putting green turf in the United States, until problems with its seed production intersected with the availability of seeded creeping bentgrass. An attempt in the 1970s to re-introduce velvet bentgrass depended on the light-green colored Kingstown, which failed as managers may have over-fertilized it without controlling the thatch which subsequently developed (Brilman and Meyer, 2000). Recent research indicates nitrogen (N) rate, vertical mowing and topdressing don't influence thatch accumulation of the newer cultivar SR7200, at least in the first few years after establishment (Boesch and Mitkowski, 2007).

Some researchers indicate velvet bentgrass may have lower N and irrigation requirements than creeping bentgrass (Skogley, 1975; DaCosta and Huang). Several new velvet bentgrass cultivars have been developed since the 1990s by breeders in the Pacific Northwest and in New England. Cultivars such as Vesper and SR7200 have demonstrated as good or better wear tolerance compared to creeping bentgrass (Samaranayake et al., 2008). A demonstration project at the Green Course of Bethpage State Park indicated velvet bentgrass greens had lower pesticide requirements than mixed creeping bentgrass/*Poa annua* putting greens (Grant and Rossi, 2004).

Previously, all research on velvet bentgrass for putting greens has been conducted on the Eastern coastline of the United States on soils with acidic pH. Textbooks claim velvet bentgrass is only suited for use in the New England and Northwest Pacific coastal areas. These same textbooks state that creeping bentgrass requires a similar soil pH, yet superintendents throughout the United States grow creeping bentgrass on soils with pH well above 7.0.

Wisconsin superintendents have questioned if velvet bentgrass could be grown on the higher pH soils and harsher climate of the Midwest. Our goal was to determine if velvet bentgrass could be maintained as putting greens on United States Golf Association sand-based root zones with basic pH (7.5) and under low and moderate N rates (48 and 146 kilograms (Kg) N per hectare per year).

Plots were seeded June 2004 and a starter fertilizer (15-25-8) was applied to supply 21 kg of phosphorus (P) per hectare (0.5 pounds P per acre). Additional fertilizer was applied five times during 2004, providing a total of 195 kg N per hectare. We began fertilizer and mowing treatments in the spring of 2005.

A granular fertilizer was used, 21-3-12,

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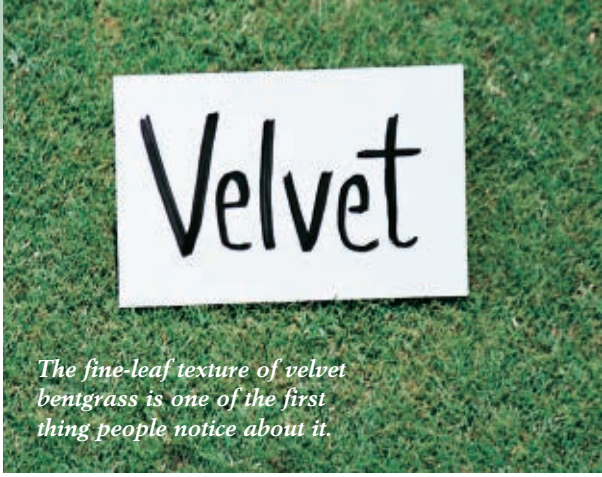
Just like the old saying, Bayleton early cures a lot of problems later in the year, saving you money and preventing future headaches. Early-season treatment for dollar spot and fairy ring on the course will provide long-lasting protection on your cool-season grasses. Make two 1-ounce applications of Bayleton FLO 28 days apart as a preventive treatment. And, the new liquid suspension concentrate formulation of the fungicide makes applications easier than ever. Bayleton FLO disperses uniformly in a spray tank and combines ease of handling and measuring with effective disease control. Visit BackedbyBayer.com.



The fine-leaf texture of velvet bentgrass is one of the first thing people notice about it.

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containing about 20 percent water-soluble N. The lowest rate was split into three applications made in May, July and September, while the higher-rate treatments were applied monthly from May through October. We compared Vesper and SR7200 to two creeping bentgrass cultivars, Penncross and L-93, under three mowing heights (2.5, 4.0 and 6.4 millimeters).

The greens were irrigated to replace 75 percent of estimated evapotranspiration (ET) losses four times weekly (we usually irrigate greens in our area daily to replace 100 percent ET losses). Traffic was applied from May through September, using a roller outfitted with golf spikes, to simulate 21,000 rounds of golf annually. Fungicides were applied curatively to allow us to collect information on disease resistance.

We didn't necessarily show that velvet bentgrass requires less N than creeping bentgrass (Koeritz and Stier, in press). In fact, there were enough differences between the two velvet bentgrasses in a number of characteristics that we concluded it's not always appropriate to make generic statements about velvet bentgrasses.

Vesper had as good or better turf quality than creeping bentgrasses in individual monthly ratings. Ultimately, our N rates appeared to be too low to provide the really high quality typically expected of golf course greens in the United States.

Vesper velvet bentgrass did prove to be as adaptable to low mowing height as creeping bentgrass. While Vesper mowed at the 4.0 mm height provided the best turf quality of any grass by mowing height combination, its turf quality was still just as good as the creeping bentgrasses at the lowest mowing height of 2.5 mm. In fact, the low mowing height seemed to favor velvet bentgrass: creeping bentgrass plants occurred in the velvet plots, probably as seed wafted in during establishment, yet the amount of creeping bentgrass in velvet turf diminished as mowing height decreased. The lower mowing heights also decreased dollar spot disease, particularly in Vesper.

Green speeds, tested every two weeks for two years, were similar between the velvet bentgrass and Penncross and lower for L-93 (Koeritz and Stier, in press). The greatest visual differences between the velvet bentgrasses and creeping bentgrasses were in color and density. Velvet bentgrasses had much better green color.

Where do we go from here? We've established that velvet bentgrasses can grow as well as creeping bentgrasses on high pH sand-based root zones. They may require less fungicide inputs, but don't necessarily need less N. We're now comparing N rates and carriers across sand and silt loam soil types.

We're also comparing the shade tolerance of velvet and creeping bentgrasses for putting greens, as well as studying the use of velvet bentgrass alone and in mixtures for low maintenance, low water-use fairways.

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When choosing a turfgrass seed or mixture, it is important to review the performance characteristics of the turf varieties in the product. The National Turfgrass Evaluation Program (www.ntep.org) offers extensive variety data by species over a wide range of locations and maintenance levels. John Deere Golf submits all of its turf varieties for review through the NTEP. For more information on turfgrass varieties, contact your John Deere Golf sales representative, or visit www.johndeere.com.

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