

# Promoting Reliable Turf

Using the best available turfgrasses can enhance golf course competitiveness.

BY MATT NELSON, LARRY GILHULY, BOB VAVREK, AND PAUL VERMEULEN

**M**any factors influence competition for players among golf courses in a local market, including location, design, price, customer service, marketing, and surface conditioning. Consistent turf quality throughout the season depends greatly on the species and cultivars of turfgrass established at the golf course. Climate and player expectations define the range of suitability of various turfgrasses. Environmental extremes, pest pressure, traffic, water and soil quality, mowing heights, and other maintenance inputs further define the parameters of turfgrass adaptation.

Providing golfers consistent playing surfaces and remaining competitive in the local market often requires renovation. Weedy grasses commonly invade older stands of turf, and what was accepted in the past is no longer acceptable. Turfgrass breeders have developed improved cultivars of all the major turfgrass species and have even developed commercially available cultivars of turfgrasses, such as paspalum, that were previously considered non-turf species for golf courses. Green Section agronomists have observed improved playing conditions, reduced pesticide use, and better maintenance efficiency across the varied climates of the Mid-Continent, North-Central, Northwest, and Pacific regions of the U.S. and western Canada, where the best-adapted turfgrass species and/or cultivars are established. This article will outline a few examples where cutting-edge turfgrass breeding has provided better playing quality and reliability.

## SINGING THE BLUES

The development of Kentucky bluegrass cultivars capable of tolerating



Vigorous rhizome growth is one trait of seashore paspalum that allows it to compete effectively against bermudagrass and weeds. In addition to exceptional salt tolerance, this grass tolerates a range of mowing heights and can withstand concentrated traffic, all with low fertility requirements.

modern fairway mowing heights ( $\frac{1}{2}$ " to  $\frac{3}{8}$ ") has renewed interest in this species for golf course fairway use across cooler climates of North America. Kentucky bluegrass exhibits excellent color, spreads vegetatively, is relatively disease resistant, and is tolerant of environmental extremes. Kentucky bluegrass is more winter hardy than annual bluegrass and perennial ryegrass, and it is a much more reliable fairway surface in the western U.S. and Canada.

At older golf courses, most of the Kentucky bluegrass established originally in fairways has been displaced by annual bluegrass (*Poa annua*) as heights of cut have been lowered. *Poa annua* is prone to various forms of winterkill, and recovery is usually slow at northern and high-elevation sites. Maintenance costs are increased to promote recovery and revenue generation is compromised by poor playing conditions.

Interseeding the new Kentucky bluegrass cultivars into an existing stand

of turf has not proven to be a viable method of turfgrass stand conversion (4, 6). It has been speculated that the long germination period and weak competitive ability of Kentucky bluegrass seedlings are the causes for poor establishment results through interseeding. Although it may be possible to use a non-selective herbicide to eliminate existing turf and establish new Kentucky bluegrass from seed, perhaps a more viable option is to consider sod.

Many golf courses throughout Alberta, Canada, have used the sodding approach successfully. Commonly, two or three fairways are renovated each fall, and this includes correcting drainage or irrigation deficiencies, amending soil, and laying new sod. The golf courses expect a life span of 10-15 years of the new Kentucky bluegrass sod before annual bluegrass populations exceed a threshold level where the amount of winterkill is too great. Sounds disruptive and expensive? At first glance it may seem so, but when the lost revenue between April and July, when annual bluegrass fairways are recovering from extensive winterkill, is factored in, the numbers make a lot more sense. Improved Kentucky bluegrass cultivars enable these courses to enjoy consistently good fairway playing conditions throughout the season.

## DO YOU FEEL THE NEED FOR SPEED?

No? Liar. Green speed is a primary factor of competition among golf courses. Better mowers, better products, better management, and often unrealistic player demands have driven the pursuit of faster green speeds. Championship conditions of 20 years ago are now commonplace at many golf courses



An older stand of putting green turf dominated by annual bluegrass will be susceptible to physiological collapse when excessively close mowing and intensive grooming practices for green speed are coupled with stressful heat and humidity. Newer creeping bentgrass cultivars have been developed with improved heat stress, density, and tolerance of close mowing — all of which improve reliability.

across North America. Whether you agree with this trend or not, there is little doubt that new cultivars of creeping bentgrass and bermudagrass improve the odds of success when ultra-fast greens are desired. This is especially true in humid climates where disease pressure and physiological demands are high.

Resurfacing putting greens with an improved turfgrass cultivar involves conviction and identification of every possible factor contributing to turf performance on greens (5, 10). Whether fumigating and establishing new turf with seed, sprigs, or sod, the golf course will experience disruption, the project will be contentious among players, and the cost of construction and lost revenue needs to be carefully estimated. But the benefits will definitely outweigh the negatives. Improved turfgrasses will allow for faster greens and more reliable turf with less pesticide and water. If you want to keep up with the Joneses, make sure you are comparing apples to apples and give your golf course the tools necessary to achieve your goals.

### FAIRWAY TO HEAVEN

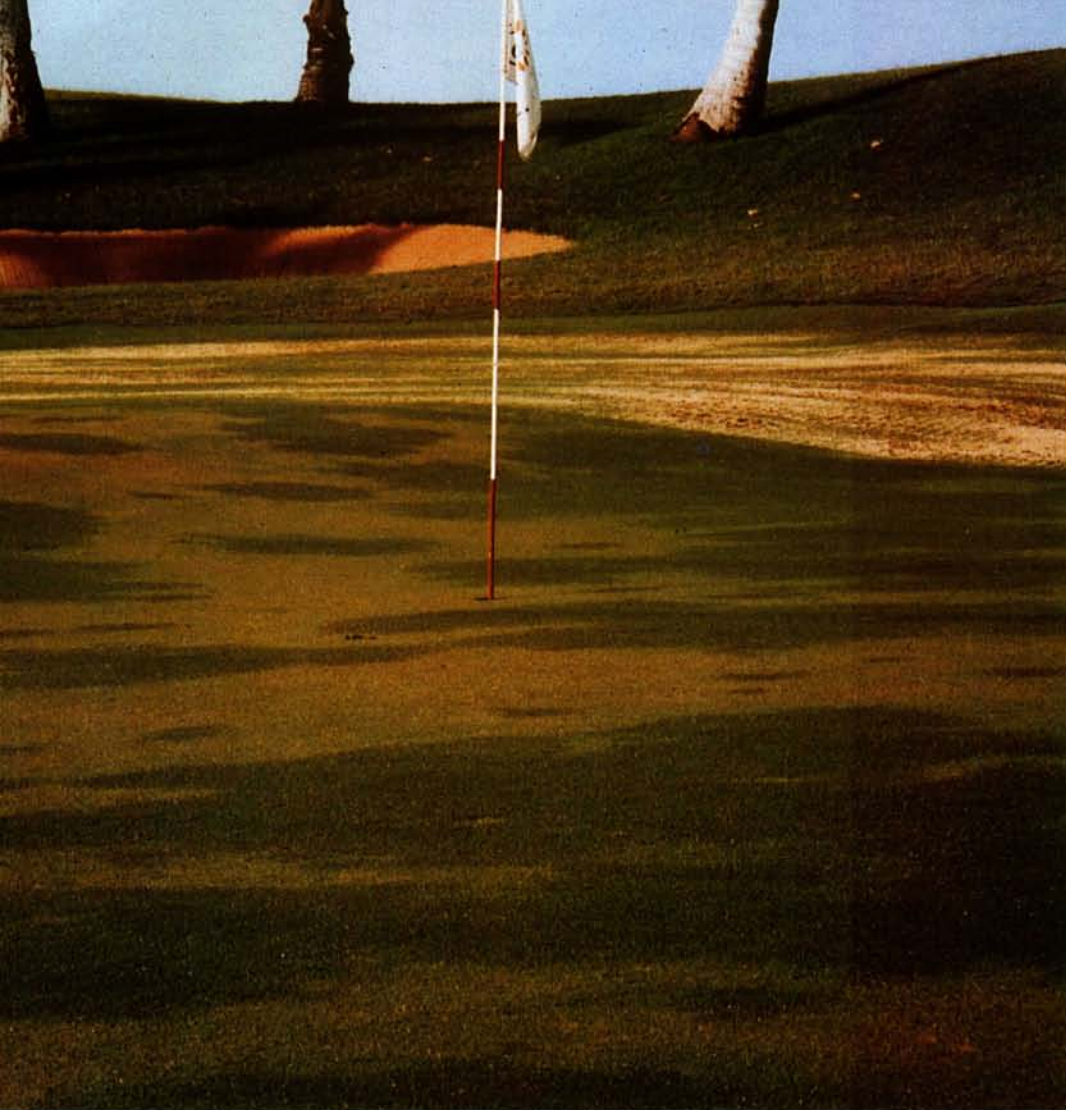
The gray leaf spot epidemic of 1998 left many golf courses with perennial ryegrass fairways in a wake of carnage throughout the Mid-Atlantic, Northeast, and Midwest. Fungicide programs have been developed to manage this disease (7, 8), but the annual cost is expensive and perhaps prohibitive. Conversion to another turfgrass species, most commonly bentgrass, is a renovation option that will result in more reliable turf throughout the year at sites where gray leaf spot disease may occur (1, 9). The cost of renovation can be recovered over time with reduced pesticide use. Less pesticide loading of the environment is another consideration. While cost of renovation and disruption are real issues in the short term, long-term improvements to turf reliability, maintenance efficiency, and golf course competitiveness should not be ignored.

### MAHALO DR. DUNCAN

In the era of modern turfgrass breeding, there arguably is no single greater envi-

ronmental achievement than the development of commercially available cultivars of seashore paspalum. Although adaptation and use of this turfgrass species is limited to small areas within the United States, numerous golf courses in Hawaii, Florida, and elsewhere in the southern U.S. have utilized this turfgrass successfully. Seashore paspalum is extremely salt tolerant, maintains exceptional vigor at low mowing heights, is very wear tolerant, and can be used in a variety of capacities at golf courses, including greens, tees, fairways, and roughs (2). Seashore paspalum is well suited to warm-season sites with poor water quality (3). Weed, disease, and insect pressure on this turf is minimal, and many weeds can be controlled with applications of table salt! Annual fertility requirements are lower as compared to bermudagrass.

As player misconceptions are straightened out and management protocols are improved, many golf courses in warm-season climates are realizing that this grass is no longer the turfgrass of



Seashore paspalum is well adapted to conditions in Hawaii, often out-competing hybrid or common bermudagrass in greens, tees, fairways, and roughs.

the future, but the turfgrass of today. Reduced maintenance inputs with improved playability and turfgrass reliability are the often-stated goals of turfgrass breeding funded by the USGA's Turfgrass and Environmental Research Program.

### IS THERE VALUE IN RENOVATION?

Science and technology have contributed greatly to the modern game of golf. Equipment development has enabled players to hit the golf ball farther than ever, and golf clubs are more forgiving of slightly miss-hit golf shots. Better irrigation technology, mowers, products, construction techniques, and other advances have enabled golf course superintendents to maintain the type of conditions and uniformity that not

too many years ago would have been impossible. With little doubt, turfgrass breeding programs have contributed significantly to current golf course conditioning. In fact, attempting to provide the type of playing conditions desired at many golf courses with an inferior turfgrass is the biggest limiting factor in certain climates. Just as older homes or buildings require a new roof or structural improvements periodically, or a classic automobile requires an engine rebuild to keep it running, older golf courses should consider establishing new, improved turfgrasses to maintain desired quality.

The examples illustrated in this article represent but a few management decisions made at golf courses across the Mid-Central, North-Central, and Northwest regions of the USGA

Green Section. When the conditions at your golf course fail to meet expectations, a review of turfgrass species and/or cultivars present on the golf course is one of the first assessments that should be made. In many instances, renovation to take advantage of improved turfgrasses will provide better playing quality and consistency, streamline maintenance efficiency, safeguard environmental quality, and positively affect the bottom line at the course. Choosing the best grass for a specific application is among the first steps of promoting reliable turf.

### LITERATURE CITED

1. Dernoeden, P. H. 1997. The transition from perennial ryegrass to creeping bentgrass fairways for the Mid-Atlantic region. *USGA Green Section Record*. 35(5):12-15.
2. Duncan, R. 1996. The environmentally sound turfgrass of the future. *USGA Green Section Record*. 34(1):9-11.
3. Duncan, R. R., and R. N. Carrow. 2002. Growing in seashore paspalum with multiple challenges. *USGA Green Section Record*. 40(3):22-28.
4. Koski, T., and J. Newberry. 2004. Conversion of ryegrass fairways to bluegrass: Impossible dream? *USGA Green Section Record*. 42(1):6-7.
5. Moore, J. 1998. Helping your greens make the grade. *USGA Green Section Record*. 36(2):1-7.
6. Nelson, M. 2001. Singing the blues. *The Perfect Lie*. 25(1):10-11.
7. Uddin, W., G. Viji, and P. Vincelli. 2003. Gray leaf spot of perennial ryegrass turf: An emerging problem for the turfgrass industry. *USGA Green Section Record*. 41(6):9-13.
8. Vermeulen, P. 1999. Achilles heel. *USGA Green Section Record*. 37(4):1-5.
9. Vermeulen, P. 2000. And the survey says ... *USGA Green Section Record*. 38(5):8-10.
10. Vermeulen, P. 2003. Maybe it's time for a change. *USGA Green Section Record*. 41(6):28.

MATT NELSON, *agronomist*, and LARRY GILHULY, *director*, are located in the USGA Green Section's Northwest Region. BOB VAVREK is a senior agronomist in the North-Central Region, and PAUL VERMEULEN is director of the Mid-Central Region. Collectively, they amass 56 years of service to the Green Section.