

TURFGRASS TRENDS

OVERSEEDING

Perennial Ryegrasses Fare Well in Overseeding of Bermudagrass Fairways

Poa trivialis cultivars slower to establish and more prone to quickly disappear upon being weakened

By Kevin N. Morris

For much of the Southern half of the United States, overseeding bermudagrass fairways is a common practice used by golf courses to produce the beautiful green product desired by so many golfers, especially those escaping the winter blues of Northern climates.

Golf course owners, managers and superintendents seek grasses that establish quickly, exhibit exceptional playability, are aesthetically pleasing and require fewer inputs. Consequently, a research project was developed and jointly sponsored by the Golf Course Superintendents Association of America (GCSAA), the United States Golf Association (USGA) Green Section and the National Turfgrass Evaluation Program (NTEP) to evaluate cultivars, blends and mixtures for their use in overseeding bermudagrass fairways.

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Mountain Vista Golf Course in Palm Desert, Calif., features Axcella annual ryegrass in the center and perennial ryegrass to the left and right.

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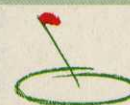
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TABLE 1**TRIAL LOCATIONS: ON-SITE OVERSEEDING OF BERMUDAGRASS FAIRWAYS**

Sponsored by USGA, GCSAA and NTEP

Location	Golf Course	Research Superintendent	Cooperator	University
Tucson, Ariz. (1999-2000)	Tucson Country Club	Marty Wells	Dr. David Kopec	Arizona
Green Valley, Ariz. (2000-01)	C. C. of Green Valley	Dr. David Kopec	Arizona	
Palm Desert, Calif.	Mountain Vista	Nancy Dickens	Dr. Robert Green	California-Riverside
Orlando, Fla.	Grand Cypress	Tom Alex	Dr. Al Dudeck	Florida
Duluth (Atlanta), Ga.	Atlanta Athletic Club	Ken Mangum	Dr. Gil Landry	Georgia
Starkville, Miss.	Mississippi State Univ.	Pat Sneed	Dr. Jeff Krans	Mississippi State
Crescent (St. Louis), Mo.	Players Club at St. Louis	Todd Marquette	Dr. Erik Ervin	Missouri
Myrtle Beach, S.C.	Blackmoor	Bob Zuercher	Dr. Bruce Martin	Clemson
Garland (Dallas), Texas	Fire Wheel Golf Park	Gary Chambers	Dr. Milt Engelke	Texas A&M-Dallas
The Woodlands (Houston), Texas	The Woodlands Gant Austin	Scott Hamilton, Station	Dr. Richard White	Texas A&M-College
Charlottesville, Va.	Glenmore C.C.	Tim Thomas	Dr. David Chalmers	Virginia Tech

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Ten golf courses were chosen to host the On-site Overseeding Trials (Table 1). Because overseeding grasses provides a temporary playing surface for fall, winter and spring and are reseeded each year, cultivars were seeded in two consecutive years (fall 1999 and fall 2000) in exactly the same location on each course for each of the two years. This allowed researchers to identify entries that persisted over time.

Trials were conducted mainly with named cultivars and commercially available blends or mixtures. This led to the inclusion of many perennial ryegrass entries, as single cultivars or blends, and also single cultivars of *Poa trivialis* as well as mixtures of perennial ryegrass and *Poa trivialis*. In addition, two cultivars of intermediate ryegrass and one annual ryegrass cultivar were included in the trial.

Trials were established on active play sites where golfers hit fairway golf shots and/or drove golf carts. Since seeding rates vary widely from one region to another, each location was consulted concerning typical overseeding rates in their area. The most appropriate rate for each grass



The Woodlands (Texas) Golf Course was one of 10 courses selected to participate in the overseeding trial.

type was then assigned to the locations (Table 2).

The experimental plot size was large (5 x 20 feet), replicated three times. Host clubs provided the daily maintenance of the fairway site.

An advisory committee consisting of representatives from GCSAA, USGA, NTEP, universities and the turfgrass seed industry recommended establishment and maintenance procedures.

The researcher at the cooperating university was responsible for data collection. Data was collected from each trial site on percent establishment, turfgrass quality, genetic color, speed of transition from bermudagrass to overseeded grass in fall and from overseeded grass to bermudagrass

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Are minerals challenging your course and your greens? Learn about the Toro Hydroject and how it helps keep salts and other minerals from building up on grasses. Read the interview with Dr. Ron Duncan and others in the December issue of *Toro Advantage* at www.toro.com/toro/advantage.

TABLE 2

ON-SITE FAIRWAY OVERSEEDING TRIAL LOCATION SEEDING RATES

Seeding rate in pounds per acre

GRASS TYPE	STARKVILLE, MISS.	DULUTH, GA.	CHARLOTTESVILLE, VA.	ORLANDO, FLA.	TUCSON, ARIZ.	MYRTLE BEACH, S.C.	PALM DESERT, CALIF.	ST. LOUIS	DALLAS	THE WOODLANDS, TEXAS
Perennial ryegrass - single cultivars or blends	300	450	300	450	600	300	600	300	300	450
<i>Poa trivialis</i> single cultivars	100	100	100	100	100	200	200	100	100	200
Mixtures of perennial rye or intermediate rye and <i>Poa trivialis</i>	250	400	250	400	400	250	400	250	250	400

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in spring. In addition, any damage from environmental stress, traffic and divoting, diseases or insects were noted by the research cooperator.

Results and discussion

The 42 entries in the trial (Table 3) were seeded in September or October 1999 and again in fall 2000 at the 10 golf course sites.

Data collected from fall 1999 to spring 2001 was compiled, statistically analyzed and reported. The data for each year can be found on the NTEP Web site (www.ntep.org/onsite/ost.htm).

The following are general observations concerning the trials over the two-year testing period:

■ The *Poa trivialis* cultivars were generally slower to establish and develop into a dense stand than the perennial ryegrasses; also they exhibited a lighter green color than the perennial ryegrasses.

■ Generally, entries were consistent in their performance from one location to another. For the most part, the perennial ryegrasses provided the highest quality turf. The exception was the high performance of the *Poa trivialis* cultivars and perennial ryegrass/*Poa trivialis* mixtures at Orlando, Fla., Houston and Charlottesville, Va.

■ At most locations, there was no statistical difference in overall turfgrass quality between the top 25 to 30 entries (out of 42 total in the trial).

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Golf car traffic on plot area at The Woodlands (Texas) Golf Course.

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TABLE 3

ON-SITE TESTING OF GRASSES FOR OVERSEEDING OF BERMUDAGRASS FAIRWAYS

Entries and sponsors (as of Sept. 1999)

No.	Entry Name	Species or composition	Sponsoring company
1.	Allsport	perennial ryegrass	LESCO
2.	LS-DE1	perennial ryegrass	LESCO
3.	Proam	<i>Poa trivialis</i>	LESCO
4.	Barlennium	perennial ryegrass	Barenbrug USA
5.	Pirouette	perennial ryegrass	Barenbrug USA
6.	Bariviera	<i>Poa trivialis</i>	Barenbrug USA
7.	Professional's Select	40 percent Windstar, 35 percent Sonata, 25 percent Jet p. ryegrass blend	Pennington Seed
8.	Transist	intermediate ryegrass	Pickseed West
9.	Pick HR A-97	intermediate ryegrass	Pickseed West
10.	First Cut	85 percent Paragon p. rye, 15 percent Stardust <i>Poa trivialis</i>	Turf Merchants
11.	Brightstar II	perennial ryegrass	Turf-Seed
12.	Charger II	perennial ryegrass	Turf-Seed
13.	Citation III	perennial ryegrass	Turf-Seed
14.	Brightstar II + Winterplay	85 percent Brightstar II p. rye, 15 percent Winterplay <i>Poa trivialis</i>	Turf-Seed
15.	Charger	perennial ryegrass	Standard Entry
16.	Citation III + Winterstar	85 percent Citation III p. rye, 15 percent Winterstar <i>Poa trivialis</i>	Turf-Seed
17.	Winterplay	<i>Poa trivialis</i>	Standard Entry
18.	Axcella (ABT-99-3.268)	annual ryegrass	DLF International Seeds
19.	Paragon	perennial ryegrass	Turf Merchants
20.	PST-3BK-99	perennial ryegrass	Pure-Seed Testing
21.	Fiesta 3	perennial ryegrass	Pickseed West
22.	Futura 2500	33 percent Cutter perennial rye, 33 percent Sunshine perennial rye, 33 percent Transist intermediate rye	Pickseed West
23.	MED-007	25 percent JR-151, 25 percent JR-142, 25 percent JR-128, 25 percent JR-265 p. ryegrass blend	Simplot Turf & Hort.
24.	Capri	perennial ryegrass	DLF International Seeds
25.	Leaderboard	34 percent Pennant II, 33 percent Panther, 33 percent Seville II perennial ryegrass blend	ProSeeds Marketing
26.	Seville II	perennial ryegrass	ProSeeds Marketing
27.	Snowbird	<i>poa trivialis</i>	ProSeeds Marketing
28.	MP58	perennial ryegrass	Jenks Seed Connection
29.	Prime	33 percent Elfkin, 33 percent MP58, 33 percent MP88 p. ryegrass blend	Jenks Seed Connection
30.	Elfkin	perennial ryegrass	Jenks Seed Connection
31.	MP111	perennial ryegrass	Cascade Int'l Seed Co.
32.	Mountain View Seed Blend 1	40 percent Pearl, 30 percent Pageant II, 30 percent EP57 p. ryegrass blend	Mountain View Seed Co.
33.	Mountain View Seed Blend 2	40 percent EP56, 30 percent Pearl, 30 percent Academy p. ryegrass blend	Mountain View Seed Co.
34.	Mountain View Seed Blend 3	40 percent EP57, 30 percent EP56, 30 percent Flash p. ryegrass blend	Mountain View Seed Co.
35.	Essence	perennial ryegrass	DLF International Seeds
36.	Top Hat	perennial ryegrass	Standard Entry
37.	Cebeco Blend 1	33 percent Top Hat, 33 percent R2, 33 percent Gator II p. ryegrass blend	DLF International Seeds
38.	Sabre	<i>Poa trivialis</i>	Standard Entry
39.	Tourstar	34 percent Imagine, 33 percent Ice, 33 percent Lynx p. ryegrass blend	AgriBioTech
40.	Marvelgreen + Laser	40 percent Palmer III, 20 percent Prelude III, 20 percent Phantom p. rye, 15 percent Laser <i>Poa triv.</i>	AgriBioTech
41.	Phantom	perennial ryegrass	ProSeeds Marketing
42.	Marvelgreen Supreme	50 percent Palmer III, 25 percent Prelude III, 25 percent Phantom perennial ryegrass blend	AgriBioTech

Poa trivialis may be useful in overseeding of fairways, although its performance may be inconsistent.

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■ At most locations, the annual ryegrass and intermediate ryegrass entries transitioned quicker (going from 75 percent to 25 percent cover in three to four weeks) than the perennial ryegrasses. At three locations (Green Valley, Ariz., Duluth, Ga. and Starkville, Miss.) *Poa trivialis* disappeared very quickly in the spring, leaving a plot with only 30 percent to 40 percent green bermuda. And at the South Carolina and Texas sites, *Poa trivialis*, intermediate ryegrass and the perennial ryegrasses transitioned in a similar fashion. We feel these differences are weather- and environment-related.

■ The intermediate ryegrass entries generally had lower quality ratings than the perennial ryegrasses. The one annual ryegrass entry, Axcella, finished in the bottom third of all entries at most locations.

Summary

Since seeding rates and maintenance levels differed from one location to the next, data were not summarized and averaged across all locations. However, we can make the following general conclusions concerning the trial:

1. Many perennial ryegrasses perform well in overseeding and often there is no statistical difference among the entries.

2. *Poa trivialis* may be useful in overseeding of fairways, although its performance may be inconsistent. It is slower to establish than perennial ryegrass and it seems that when *Poa trivialis* is weakened due to heat or disease, it disappears quickly. This leaves insufficient green bermuda for acceptable quality.

However, if the goal is little or no physical disturbance of the bermuda prior to overseeding, the small seed size of *Poa trivialis* allows it to sift through the bermuda canopy to make soil contact. The result is a better stand of *Poa trivialis* compared to perennial ryegrass.

3. Perennial ryegrass and *Poa trivialis* mixtures generally did not perform equal to perennial ryegrass or *Poa trivialis* cultivars. The addition of *Poa trivialis* generally results in lower quality ratings. The mixture may hasten transition somewhat, but overall quality will most likely suffer.

4. Management practices play a big role in establishment and transition. At the Orlando site, the superintendent used chemical applications at light rates to hasten transition. This

seemed to affect the perennial ryegrass more than the *Poa trivialis*. At the Charlottesville site, the superintendent did not physically damage the bermuda before overseeding, resulting in better establishment and quality of the *Poa trivialis* entries. Other locations, like Green Valley and Palm Desert, Calif., intensively scalped and verticut their bermuda prior to overseeding, favoring the ryegrasses.

5. The intermediate ryegrasses may be useful in fairway overseeding if the goal is an earlier transition.

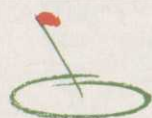
6. Transition from the overseeding grass to bermuda in spring is rarely smooth. Weather patterns are important in determining the ease of transition from one species to another. In cooler, more Northern locations, grasses that are too strong going into winter may not have as much bermuda returning in spring. When the overseeding grass dies, there may not be sufficient bermuda to provide adequate cover and quality.

7. There seems to be a balance between quality and cover of each species in fall and spring. The higher the quality of the overseeding early in fall, the more overseeding present in spring, along with reduced bermuda cover. The result is a more difficult spring transition. The lower the quality of overseeding in fall, the less overseeding present in spring, often leading to a better spring transition. Use of a weaker cultivar or species may make for a better spring transition. However, if heat and humidity come early, the weaker grasses may leave sooner than expected.

Overseeding bermudagrass fairways has definite benefits but also associated risks. Variable weather patterns, preplant fairway preparation and seasonal management practices can drastically affect the quality of overseeding.

Therefore, golf courses that prescribe to fairway overseeding need to have clear goals and objectives for the practice as well as realistic expectations of the outcome. This is because, in the author's opinion, successful overseeding is still as much art as science.

Kevin N. Morris is the executive director of the National Turfgrass Evaluation Program. His duties include leadership, administration and coordination of national tests for 17 grass species at approximately 70 test sites across the United States and Canada. He provides consultation to turfgrass managers at facilities such as Laurel and Pimlico Race Courses and has eight years experience as co-owner of a lawn service company.



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