FIVE YEAR TESTS REVEAL TRAITS OF WINTER OVERSEEDING MIXTURES

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Winter overseeding is the late fall seeding of one or more cool season turfgrass species/cultivars onto the surface of an established warm season turf. Winter overseeding practices are well established and date back to the early uses of grass for putting surfaces in the South. Overseeding of bermudagrass putting greens provides an improved putting surface and more aesthetically pleasing turf compared to the dormant turf of bermudagrass. Species selection for winter overseeding putting greens 10-12 years ago was dominated by annual ryegrass. Today, improved cultivars of perennial ryegrass are the predominate species used in winter overseeding. The number of commercially available perennial ryegrass cultivars advertised for winter overseeding on putting greens has increased each year and presently stands at approximately 20 available cultivars.

The use of perennial ryegrass for overseeding putting greens includes both monostands and polystands (blends and mixtures). Overseeding mixtures of perennial ryegrass are generally composed of one or more cool season turfgrasses including fine-leafed fescues, rough bluegrass *(Poa trivialis),* Kentucky bluegrass and creeping or colonial bentgrass. The perennial ryegrass component of these mixtures provides rapid establishment, environmental hardiness, wear tolerance and sustained and uniform growth. The other turfgrass components used in these mixtures are generally added to provide improved characteristics of putting quality (fine texture, high shoot density, smoothness, etc.) and/or regulate stand persistence in the spring.

Greens were divided in half for tests. Differences were not apparent to golfers either in appearance or play.

The evaluation of cool season turfgrass blends and mixtures for winter overseeding putting greens is unique compared to other types of turf evaluations. Winter overseeded species are evaluated as an annual turf, when in fact, all species except annual ryegrass are perennial in nature. In addition, seeding rates of overseeded blends or mixtures on putting greens exceed by 3 or 4 fold recommended seeding rates for establishment of these same species when planted as a perennial or non-overseeded turf. The evaluation of overseeded species takes into account not only turf quality as a component of performance, but establishment rate and density of the overseeding (fall transition) as well as rate and schedule of overseeding dieback (spring transition). Ideally, an overseeding selection for putting greens should provide rapid, uniform and high initial shoot density during fall transition, followed by sustained, uniform and high shoot density and green color throughout the winter and early spring. Spring transition, which occurs in late spring or early summer, should be a smooth and controlled dieback of the overseeding allowing a gradual and uniform green-up of the bermudagrass without significant sacrifice in putting quality.

The most common approach to a turfgrass evaluation program is to utilize replicated field trials at state, federal or private research locations using small plots (20-50 sq. ft.). Although this evaluation approach is beneficial and most times the only available procedure, the information gathered is limited by plot size and actual elements of turfgrass use and culture. The close proximity of small plot field trials allows rapid and convenient observations of comparative difference between entries. These comparative differences, however, can be readily overemphasized and may or may not be significant to the consumer (homeowner, golfer, etc.).

In the fall of 1976, an overseeding evaluation approach was undertaken to evaluate overseeding species performance using large plots (1000-2000 square feet) and a cultural and use environment representative of putting greens. This evaluation approach was conducted by utilizing an 18-hole public golf course owned and operated by Mississippi State University. All entries were evaluated by splitting each of the 18 putting greens into half and each half section seeded to a randomly selected overseeding entry. This design provided a total of 36 plots or half greens. All

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Table 1. List of overseeding entry, composition, years evaluated, seeding rate and seed company which supplied each entry evaluated on the putting green surfaces of Mississippi State University — Lakeside Golf Course during a 5 year evaluation period (1976-80).

Overseeding entry	Species composition	Year(s) evaluated	Seeding rate	Seed Supplier
			lbs/1000 sq. ft.	
Derby	perennial ryegrass	1976-78	40	International Seeds, Inc.
Dixie Green	perennial ryegrass + fine-leafed fescue	1976-79	35	
Dixie Green + Sabre	perennial ryegrass + fine-leafed fescue + rough bluegrass	1977-79	20	
Phd	perennial ryegrass blend	1979	40	
Medalist 2	perennial ryegrass blend	1976-77	40	Northrup King & Company
Medalist 5	perennial ryegrass blend	1977-79	40	
Medalist 6	perennial ryegrass blend	1978 & 1980	40	
Medalist 7	perennial ryegrass blend	1980	40	
Medalist 400	perennial ryegrass + fine-leafed fescue	1977-78	35	
NK formula C	perennial ryegrass blend	1979	35	
Regal	perennial ryegrass	1977-80	40	International Seeds Inc.
Celebrity	perennial ryegrass + fine-leafed fescue			
Super Celebrity	perennial ryegrass + rough bluegrass	1980	20	
Celebrity Plus	perennial ryegrass + fine-leafed fescue + rough bluegrass	1979	20	
Futura	perennial ryegrass blend	1978	40	Pickseed West, Inc.
Futura Plus	perennial ryegrass blend	1978 & 1980	35	
Diplomat & Yorktown	perennial ryegrass blend	1976	40	Lofts Pedigreed Seeds, Inc.
Diplomat	perennial ryegrass	1976-77	40	
Diplomat & Yorktown II	perennial ryegrass blend	1976	40	
Yorktown	perennial ryegrass	1976-77	40	
Yorktown & Jamestown	perennial ryegrass + fine-leafed fescue	1976	35	
Triplex	perennial ryegrass blend	1977	40	
Yorktown II	perennial ryegrass	1977	40	
Marvelgreen	perennial ryegrass blend	1978	40	
Marvelgreen 3+1	perennial ryegrass + fine-leafed fescue	1978	40	
Marvelgreen + Sabre	perennial ryegrass + rough bluegrass	1978	20	
Winterturf 1	perennial ryegrass blend	1976-78	40	O. M. Scott and Sons
Winterturf 3	perennial ryegrass + Kentucky bluegrass	1976	30	
702 Blend	perennial ryegrass blend	1977	40	
Caravelle	perennial ryegrass	1977	40	
Loretta	perennial ryegrass	1978	40	
CBS	perennial ryegrass blend	1976-79	40	Turf-Seeds, Inc.
Omega	perennial ryegrass	1976	40	
Citation	perennial ryegrass	1977-79	40	
Manhattan	perennial ryegrass	1977-78	40	
Citation + Oregreen	perennial ryegrass + perennial x annual hybrid	1979	40	
Pennfine	perennial ryegrass	1976	40	Sanford Seed

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Table 2. 5 year average performance ratings of selected winter overseeding entries evaluated on the putting greens of Mississippi State University — Lakeside Golf Course.

Visual Turfgrass Performance Ratings[1]	
Overseeding entry	5 Year Average
CBS	6
Pennfine	6
Derby	6
Winterturf 1	7
Citation	6
Regal	7
Medalist 5	6
Dixie Green	6
Dixie Green + Sabre	7

[1]Visual performance rating scored 1-9; 1 = poorest and 9 = best.

entries were replicated twice and provided space for 18 selections. Overseeding entries used in the evaluations were limited to commercially available monostands, blends and/or mixtures marketed for overseeding use. Performance evaluations were based on a minimum of monthly visual observations and ratings using a numerical scale of 1 — 9; with 1 = poorest and 9 = best. Performance ratings were conducted by various groups including golf course superintendents, golfers, golf professionals and university students and researchers. All seed companies participating in these tests supplied entries on a voluntary basis and were required to supply seed for 2 replications. Seeding rates and choice of entries were decided by the seed companies cooperating. Due to changes in yearly participation of individual seed companies and entry choices, a wide variety of different entries were used in the overall 5 year evaluation period. The list of overseeding entries used for one or more years over the past 5 years is presented in Table 1. Overseeding performance scores which are reported represent only those selections which were evaluated 3 or more years out of 5 (Table 2). The findings in overseeding performance, as shown in Table 2, are generally representative of the other entries included in the evaluation program 2 years or less. The entire evaluation using putting greens for plot area was carried out over 5 consecutive years (1976-1980).

The 5 year average scores showed little or no difference between winter overseeding entries when compared side by side under actual putting green conditions. The anticipated complaints from golfers putting across the center dividing lines on each green rarely occurred. Nearly all golfers were surprised to learn they had just played across 18 different overseeding combinations. No entry evaluated showed consistently high or low performance ratings across the 5 year period. The greatest similarity in putting quality among overseeding entries were observed for the perennial ryegrass blends and monostands. The characteristics of texture, uniformity, density, disease resistance, wear, fall transition and spring transition were similar for all perennial ryegrass blends and monostands evaluated. Color was slightly different among several perennial ryegrasses in which the cultivars Regal, Citation, Derby, and Caravelle showed a slightly darker green coloration; whereas, Loretta showed a lighter green color when compared to the other perennial ryegrasses.

Differences in overseeding performance that were noticed in addition to color were representative of overseeding mixtures including rough bluegrass *(Poa trivialis)*. These overseeding mixtures which included perennial ryegrass plus rough bluegrass were Marvelgreen + Sabre, Super Celebrity or Dixie Green + Sabre. Differences in these mixtures compared to blends or monostands of perennial ryegrass were most noticeable in the spring. The rough bluegrass mixtures generally showed higher shoot density, finer-leaf texture and greater smoothness compared to the other entries. Mixtures containing rough bluegrass, however, did not rank superior overall as based on a seasonal average. This was due, in part, to poor spring transition characteristics which resulted in prolonged persistence into the spring and inhibition of the bermudagrass spring green-up.

The differences in seasonal average scores were not found statistically different and therefore can not be attributed solely to the overseeded entries. Greens characteristics, including soil type, drainage, slope exposure, shade and/or other factors collectively resulted in more variation than could be overcome by an individual overseeding entry. This result points out the high variability in environmental and site conditions golf course superintendents manage turf and close similarity of the overseeding entries evaluated. This similarity in putting quality and performance ratings of the perennial ryegrass entries provides the consumers (golfer, golf course superintendents, golf professionals, etc.) with the option to direct additional attention to price and service when products perform equally. The overseeding mixtures including rough bluegrass showed improved characteristics of putting quality and performance which can be utilized by individual golf courses based on needs. Care should be taken, however, to manage and control the inherent growth characteristics of rough bluegrass for a smooth and controlled spring transition. **WTT**