

Overseed Greens Trial 1997-1998

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Abstract

Perennial ryegrass germplasm was quicker to establish plot cover on a "Tifgreen" bermudagrass green than that of Poa trivialis when used alone. Poa trivialis alone produced lighter color turfs when compared to perennial ryegrass. Turfgrass color was generally uniform in appearance, however, within each entry. Therefore, color as a selection criteria is a matter of choice by the user. The turfgrass mixture "Catalina/Winterplay" (80% perennial ryegrass/20% Poa trivialis) was intermediate in turfgrass color. "Brightstar II" PR generally produced a dark turf throughout the growing season. For overall turfgrass quality, the perennial ryegrasses generally out performed the Poa trivialis germplasm. The mixture of "Catalina/Winterplay" produced a very dense turf, followed closely by "Turfstar Plus" PR, "95-1" PR and "PT-4" PT. "Snowbird" PT had the least amount of living ground cover by May 31, which is desirable from a transition standpoint.

Introduction

Each fall in the southwest, golf courses which feature bermudagrass putting greens overseed with a cool season grass to facilitate year round playing conditions. The cool season overseed is required to germinate quickly, provide a puttable surface, maintain performance through the winter, and yield to the bermudagrass in early summer. The objective of this test was to assess the performance of perennial ryegrass and Poa trivialis germplasm for suitability as overseed material under desert conditions.

Materials and Methods

A seven-year-old "Tifgreen" bermudagrass green was used as the test site at the Karsten Turfgrass Facility at the University of Arizona in Tucson. The green received no special cultivation at overseeding, but was allowed to increase in height from 5/32" to 8/32" at the time of seeding. The bermudagrass received 0.25 lb. -N-/M the first week of September as the last fertilization before overseeding on October 22, 1997.

The following entries were included in the test:

"Catalina/Winterplay" (80% perennial ryegrass/20% Poa trivialis) 22 lbs./M
"Saratoga" (Poa trivialis) 5 lbs./M
"Brightstar II" (perennial ryegrass) 35 lbs./M
"Premier II" (perennial ryegrass) 35 lbs./M
"Turfstar Plus" (perennial ryegrass) 35 lbs./M
"95-1" (perennial ryegrass) 35 lbs./M
"Snowbird" (Poa trivialis) 2.5 lbs./M
"PT-4" (Poa trivialis) 5 lbs./M .

A non-overseeded control was included. Plot size was 4' x 10'. Each plot appeared four times in a RCB design. Seed was topdressed with 1/4" of dry sand and then rolled. Plots were rated visually for establishment, the amount of bermuda

present, turfgrass color, quality texture, density and uniformity. Ratings began on November 6, 1997 and ended on May 31, 1998.

The test received 5.5 lbs. of N, 2.0 lbs. of P and 2.25 lbs. of K per 1000 ft² from November 19, 1997 to May 19, 1998. In addition, plots received a total of 15 oz. product of Ferromec chelated iron per 1000 ft² on five occasions. The green was aerified on December 5 and again on May 19 in one direction using 1/4" solid tines. No topdressing was added.

All data was analyzed using the analysis of variance technique using SAS software. Least significant difference (LSD) values were used as the mean separation statistic when the F ratio for the "entry" effect was significant at the P=0.05 level or less.

Results and Discussion

The percentage of plot cover (of the cool season overseed) was assessed visually on November 6, 1997. Mean cover ranged from 6% to 54%. The *Poa trivialis* germplasm was slowest to provide cover due to its slower germination and narrower leaf width when compared to ryegrass. The mixtures of perennial ryegrass and *Poa trivialis* were intermediate for percent plot cover and the ryegrasses provided the quickest and greatest amount of surface cover. The range among ryegrass entries was 34% to 54% (Table 1).

On December 17, the percent bermudagrass values were assigned to plots using a scale of 0-100%. Any bermudagrass that was present was now tan in color due to winter dormancy. The entries which showed the greatest amounts of dormant bermudagrass at the surface were "Snowbird" PT (42%), "Saratoga" PT (31%), and "PT-4" PT (30%). The "Turfstar Plus" perennial ryegrass had the least bermudagrass showing (mean = 10%) (Table 1).

The plots were again assigned values for percent bermudagrass present on January 23, 1998. The "entry" main effect was again highly significant and the mean entry scores ranged from 2% to 14%. "Snowbird" PT averaged 14% bermuda (tan-straw), followed by "PT-4" PT (9%) and "Saratoga" PT (8%). The perennial ryegrass entries showed 2-7% bermudagrass straw present (Table 1). The visible dormant bermudagrass was present since the green had a high percentage of lateral stolons at the close of the bermuda season and no verticutting or scalping occurred as part of the overseeding preparation.

Turfgrass Color

Turfgrass color was assigned to plots on six dates using the National Turfgrass Evaluation Program (NTEP) rating scale. "Winter" and "spring" color averages were calculated as the average color values of December, January, February,; and March, April, May, respectively. On all dates, the "entry" effect was significant for turfgrass color.

December mean color scores ranged from 4.5 to 8.0 among overseed entries (Table 2). The PT entries were lighter in color than perennial ryegrass, which is not a penalty but a preference in selection. All entries which were 100% PT ("Snowbird" PT, "PT-4" PT and "Saratoga" PT) had mean color scores within the 4.5 to 4.8 range. The mixture of "Catalina/Winterplay" was intermediate in color (mean = 6.0). The darkest perennial ryegrass was "Brightstar II" which had a mean December color score of 8.0 (Table 2).

Mean color scores ranged from 4.5 to 7.8 in January 1998. The "Catalina/Winterplay" mixture was intermediate in color compared to the lighter PT entries and the darker perennial ryegrass entries. At this time, "95-1" and "Premier II" perennial ryegrasses were slightly darker than "Brightstar II". However, the difference between these particular entries was not statistically significant (Table 2).

Mean color scores for February ranged from 4.3 to 8.0 with again the PT germplasm being lighter in color than the perennial ryegrass entries. "Brightstar II" PR was clearly the darkest green in color. The "Catalina/Winterplay" mixture was slightly lighter in color than it was previously. This was most likely to the increased growth of the *Poa trivialis* component over that of the perennial ryegrass (Table 2).

"Winter averages" ranked similar based on the three previous months color performance. "Snowbird" PT ranked similar to "PT-4" PT, both which were slightly darker than "Saratoga" PT. Among perennial ryegrass entries, "Brightstar II", "95-1" and "Premier II" were darker than "Turfstar Plus". The mixture of "Catalina/Winterplay" was again intermediate (mean = 5.8)(Table 2).

For March, color scores ranged from 2.8 to 7.8. The non-overseeded bermudagrass started showing some color from initial green-up (mean = 2.8) at this time. "Saratoga" PT and "PT-4" PT were very light in color (means = 3.3) and the "Catalina/Winterplay" was now taking on more of the color from its Poa trivialis component (Table 3). "Turfstar Plus" PR was now exhibiting a mean color score of 5.0. "Premier II", "95-1" and "Brightstar II" perennial ryegrasses had mean color scores of 7.0, 7.3 and 7.8, respectively (Table 3).

In April, mean color scores among overseed entries ranged from 3.8 to 7.0. All three Poa trivialis cultivars had mean score of 3.8 to 4.0. The ryegrass cultivars "95-1" and "Brightstar II" scored mean values of 7.0, followed closely by "Premier II" (mean = 6.8)(Table 3).

At the close of the test, color scores ranged from 3.3 to 7.0. The "Catalina/Winterplay" mixture was still slightly darker than the Poa trivialis cultivars having a mean color response of 4.8. Both "95-1" and "Premier II" perennial ryegrasses scored final color values of 7.0. Both the untreated control (non-overseeded bermudagrass) scored 6.5. The lightest perennial ryegrass was that of "Turfstar Plus" PR (Table 3).

For the "spring average" "95-1" and "Brightstar II" had mean spring color scores of 7.1, followed closely by "Premier II" PR perennial ryegrass. The control (bermudagrass only) had a spring color season average of 4.6. All three "Poa trivialis" cultivars had spring color averages of 3.7 or less. "Turfstar Plus" PR had a spring color mean score of 5.3. "Turfstar Plus" PR ranked higher comparatively in "winter color" than it did for "spring color" in this test (Tables 2,3).

Yearly averages for color ranged from 2.8 (bermudagrass only) to 7.4 for "Brightstar II" PR. The lightest color perennial ryegrass was "Turfstar Plus" PR (mean = 5.9). "Snowbird" PT was slightly darker than "Saratoga" PT (4.3 vs. 4.0, respectively)(Table 4).

Turfgrass Quality

Quality scores were assigned on six dates from November 6 to May 29 using the NTEP visual rating scale. Quality mean scores among entries ranged from 3.3 to 6.5 in December (Table 5). "Turfstar Plus" PR and "Premier II" PR had the best overall quality scores of 6.5 and 6.0, respectively. "Brightstar II" PR had a mean quality score of 5.0. The "Catalina/Winterplay" mixture had a mean quality score of 5.5. All the remaining Poa trivialis cultivars had quality mean scores of 3.3 to 4.4 in December (Table 5). This is a reflection of the typical initial slower establishment of Poa trivialis, in general when compared to perennial ryegrass in warm weather.

January quality mean scores ranged from 4.5 to 8.0. The mixture "Catalina/Winterplay" had excellent looking turf (mean = 8.0) followed closely by "Turfstar Plus" PR and "95-1" perennial ryegrasses. "Brightstar II" PR, "PT-4" PT and "Snowbird" PT had mean quality score of 5.5, 5.5 and 4.5, respectively (Table 5).

In February, "Brightstar II" PR showed a vast improvement in turfgrass quality with a mean value of 8.0. The other ryegrass germplasm had mean performance values within the 7.0-7.8 range. "PT-4" PT ranked numerically highest among Poa trivialis entries for February quality with a mean value of 6.0. "Saratoga" PT and "Snowbird" PT were very close in performance with mean quality scores of 5.5 and 5.3, respectively (Table 5).

"Winter" quality averages ranged from 4.3 to 7.0 among overseeded turfs. The PT entries did not exhibit turf quality as well when compared to the perennial ryegrass germplasm entries. The mixture of "Catalina/Winterplay" had a winter quality average (6.7) which was similar in performance to "Premier II" PR (mean = 6.7) and "95-1" PR (mean = 6.6). "Brightstar II" PR had a "winter" quality score of 6.2 (Table 5).

March quality scores ranged from 4.5 to 7.0 among seeded entries. The perennial ryegrass entries (excluding "Turfstar Plus" PR) had relatively higher quality scores compared to the Poa trivialis entries. The "Catalina/Winterplay" mixture was intermediate (Table 6).

Mean quality scores for April ranged from 3.5 to 7.0 with the ryegrass germplasm generally out performing the Poa trivialis entries. The ryegrass entry "Premier II" PR had the largest numerical quality score of 7.0, followed next by "Brightstar II" PR and "Turfstar Plus" PR perennial ryegrasses. The "Catalina/Winterplay" mixture was intermediate in performance between perennial ryegrass and Poa trivialis entries (Table 6).

In May (final rating), the mean quality scores ranged from 3.5 to 6.5. The perennial ryegrass entries "Premier II" PR and "Turfstar Plus" PR had May quality scores of 6.5 and 6.0, respectively. "Catalina/Winterplay" the non-overseeded bermudagrass and "Brightstar II" PR had mean quality scores of 5.8 at this time. "Snowbird" PT finished at 3.5 (Table 6).

For average “spring performance”, “Premier II” PR, “Brightstar II” PR and “95-1” perennial ryegrasses had average scores of 6.8, 6.3 and 6.1, respectively. All three PT entries averaged 4.8 or less for spring quality (Table 6).

In terms of quality rank scores, the perennial ryegrass germplasm sometimes performed differently, based on “winter” and “spring” average quality scores. For example, “Turfstar Plus” PR ranked first for winter quality and fourth for spring quality. Both “Brightstar II” PR and “95-1” perennial ryegrasses ranked fifth and fourth for winter performance and ranked second and third for spring quality. This may be a consideration when selecting germplasm for overseeding, based on expected peak performance. For example, a resort course may want to overseed with a turf that provides superior winter performance, while a private club may expect better late season performance (Tables 5,6).

Full season (yearly) averages are provided. The ryegrass germplasm had better overall quality scores than did the Poa trivialis germplasm with the mixture being intermediate (Table 4).

Texture

Texture is a visual estimate of leaf width. Higher values indicate narrow(er) leaves, while lower values indicate wider leaves. Texture scores were assigned to plots using the NTEP rating scale for the monthly ratings in January and March.

Mean texture scores ranged from 5.0 to 8.5 in January. The greatest and most noticeable differences occurred between the mixture “Catalina/Winterplay” (mean = 8.5) and “Brightstar II” PR (mean = 5.0). “Saratoga” PT, “PT-4” PT and “Snowbird” PT had mean leaf texture scores of 7.3, 7.0 and 6.8, respectively (Table 7).

Interestingly enough, in March the perennial ryegrass entries all ranked higher numerically for finer leaf texture when compared to the Poa trivialis entries. Ryegrass entry mean scores ranged from 6.5 to 7.0, while Poa trivialis entries ranged from 5.3 to 5.5. The mixture “Catalina/Winterplay” was intermediate (mean = 6.0). Usually the rapid growth of Poa trivialis in the spring produces increased stolon density over that of the spring (data not taken). This would generally increase canopy shoot density and result in decreased leaf widths. This was not realized in this test (Table 7).

Uniformity

Turfgrass uniformity is a visual subjective rating for plot consistency and homogeneous appearance. Absolute turfgrass color, texture and shoot density do not affect uniformity unless they are a noticeable variable(s) within a plot, which decreases plot uniformity itself.

Uniformity scores were assigned to plots on four dates in February, March, April and May. The NTEP visual scale was used to assign values to all plots. The “entry” main effect was significant on all dates, except in May.

Uniformity scores in February ranged from 4.8 to 7.3 among overseeded plots. Most of the perennial ryegrass entries were generally more uniform in appearance than the Poa trivialis materials, with the exception of “Turfstar Plus” PR (Table 8).

By March, “Saratoga” PT and “Brightstar II” PR ranked numerically highest for uniformity (means = 6.0) followed by “Snowbird” PT. “Turfstar Plus” PR ranked lowest for uniformity (mean = 4.5). The non-overseeded bermudagrass averaged 3.5 (Table 8).

For April, uniformity scores ranged from 3.8 to 6.0. In general, the perennial ryegrass germplasm appeared more uniform in appearance than the Poa trivialis germplasm. Unevenness in the PT plots was evident from variable leaf texture and some color mottling (Table 9).

May uniformity scores ranged from 3.8 to 6.8. “Premier II” PR, “Turfstar Plus” PR and the mixture “Catalina/Winterplay” were among the most uniform plots. “PT-4” PT and “Snowbird” PT scored mean values of 4.8 and 3.8, respectively (Table 9).

Uniformity average scores for “winter” and for “spring” demonstrate some interactions among overseed entries. For example, “Brightstar II” PR ranked first in “winter” and third for “spring” uniformity. “Turfstar Plus” PR ranked eighth in “winter” uniformity and then ranked second for “spring” uniformity. “95-1” PR which ranked second in “winter” uniformity, now ranked sixth in “spring” uniformity. This may be desirable as a lead into transition (measured on June

10)(Tables 8,9).

Turfgrass Density

Turfgrass density values were assigned to plots in January and February using the NTEP scale of 1-9. Plots exhibiting higher relative shoot densities (visual observation) received higher numerical values than those with lesser shoot densities. On both evaluation dates, the "entry" main effect was statistically significant. In both January and February, the "Catalina/Winterplay" mixture ranked numerically highest for visual density. "Turfstar Plus" PR ranked next in January. "PT-4" PT Poa trivialis ranked first in visual density among the PT germplasm entries. "Turfstar Plus" PR was very dense in appearance, as well (Table 10).

Transition

Initial transition was evaluated by visually estimating the percent plot of living cool season grass on May 31, 1998. The percentage of living overseed turf ranged from 33% to 58% (Table 11). "Snowbird" PT had 33% living surface, followed by "95-1" PR and "PT-4" PT both with 45% mean living surface. Note the LSD value of 13.

Conclusion

1. Perennial ryegrass germplasm was quicker to establish plot cover on a "Tifgreen" bermudagrass green than that of Poa trivialis when used alone.
2. Poa trivialis alone produced lighter color turfs when compared to perennial ryegrass. Color was generally uniform in appearance, however, within each entry. Therefore, color as a selection criteria is a matter of choice by the user.
3. The turfgrass mixture "Catalina/Winterplay" (80% perennial ryegrass/20% Poa trivialis) was intermediate in turfgrass color.
4. "Brightstar II" PR generally produced a dark turf throughout the growing season.
5. For overall turfgrass quality, the perennial ryegrasses generally out performed the Poa trivialis germplasm.
6. The mixture of "Catalina/Winterplay" produced a very dense turf, followed closely by "Turfstar Plus" PR, "95-1" PR and "PT-4" PT.
7. "Snowbird" PT had the least amount of living ground cover by May 31, which is desirable from a transition standpoint.

Table 1. Mean¹ turfgrass plot cover² as overseed and percent plot bermudagrass 1997-1998 Overseed Greens Trial. University of Arizona, Karsten Turfgrass Research Facility.

	[Nov 1997] <u>% Overseed</u>	<u>ENTRY</u>	[Dec 1997] <u>% bermuda</u>	<u>ENTRY</u>	[Jan 1998] <u>% bermuda</u>
Turfstar Plus	54	Snowbird PT	42	Snowbird PT	14
Premier II	49	Saratoga	31	PT-4	9
95-1	41	PT-4	30	Saratoga	8
Brightstar II	34	Brightstar II	19	Brightstar II	7
Cat/winterplay	30	Cat/winterplay	16	Premier II	5
PT-4	13	95-1	14	95-1	5
Saratoga	9	Premier II	13	Cat/winterplay	3
Snowbird PT	6	Turfstar Plus	10	TurfStar Plus	2
Check	All	Check	All	Check	All
TEST MEAN ³	26		22		6
LSD VALUE ⁴	9		10		5

¹Values are the mean of four replications.

²Percent Overseed = (0-100%) plot cover, of coll season overseed grass. % bermuda = (0-100%) plot cover, of bermudagrass present.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 2. Mean¹ turfgrass color scores² for Fall/Winter 1997- 1998 Greens Overseed Trial. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>			
	<u>DEC 97</u>	<u>JAN 98</u>	<u>FEB 98</u>	<u>WINTER AVG</u>
Brightstar II	8.0	7.0	8.0	7.7
95-1	7.8	7.8	7.3	7.6
Premier II	7.3	7.5	7.3	7.3
Turfstar Plus	7.0	6.3	6.0	6.4
Cat/wntreply	6.0	6.0	5.5	5.8
Snowbird	4.8	5.3	4.8	4.9
PT-4	4.8	4.8	5.0	4.8
Saratoga	4.5	4.5	4.3	4.4
Check	1.0	N.A.	1.0	1.0
TEST MEAN ³	5.7	6.1	5.4	5.5
LSD VALUE ⁴	0.7	0.8	0.5	0.4

¹Values are the mean of four replications.

²Turfgrass color (1-9), 1=dead 9=darkest possible green .

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 3. Mean¹ turfgrass color scores² for Spring 1997-1998 Greens Overseed Trial. University of Arizona, Karsten Turfgrass Research Center.

<u>ENTRY</u>	<u>DATE</u>			
	<u>MAR 98</u>	<u>APRIL 98</u>	<u>MAY 98</u>	<u>SPRING AVG</u>
Brightstar II	7.8	7.0	6.5	7.1
95-1	7.3	7.0	7.0	7.1
Premier II	7.0	6.8	7.0	6.9
Turfstar Plus	5.0	6.0	5.0	5.3
Check	2.8	N.A.	6.5	4.6
	4.5	4.5	4.8	4.6
Saratoga	3.3	4.0	3.8	3.7
Snowbird	4.0	3.8	3.3	3.7
PT-4	3.3	3.8	3.3	3.4
TEST MEAN ³	5.0	5.3	5.2	5.1
LSD VALUE ⁴	0.8	0.8	1.0	0.5

¹Values are the mean of four replications.

²Turfgrass color (1-9), 1=dead 9=darkest possible green .

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 4. Yearly mean¹ color², quality², density² and texture² scores 1997-1998 Overseed Greens Trial. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>Color</u>	<u>ENTRY</u>	<u>Quality</u>	<u>ENTRY</u>	<u>Density</u>	<u>ENTRY</u>	<u>Texture</u>
Brightstar II	7.4	Premier II	6.7	Cat/wntreply	8.1	Cat/wntreply	7.3
95-1	7.3	Turfstar Plus	6.4	Turfstar Plus	7.5	Premier II	6.8
Premier II	7.1	95-1	6.3	95-1	7.1	Turfstar Plus	6.8
Turfstar Plus	5.9	Brightstar II	6.3	PT-4	7.1	95-1	6.6
Cat/wntreply	5.2	Cat/wntreply	6.0	Premier II	7.0	Saratoga	6.4
Snowbird	4.3	Saratoga	4.9	Saratoga	6.9	PT-4	6.1
PT-4	4.1	PT-4	4.7	Brightstar II	6.1	Snowbird	6.0
Saratoga	4.0	Snowbird	4.1	Snowbird	6.0	Brightstar II	5.8
Check	2.8	Check	2.6	Check	1.0	Check	N.A
TEST MEAN ³	5.4		5.3		6.3		6.5
LSD VALUE ⁴	0.3		0.7		0.9		0.7

¹Values are the mean of four replications.

²Turfgrass response scores. (1-9), 1=least desirable or dead grass, 9=best possible.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 5. Mean¹ Fall/Winter turfgrass quality scores² 1997-1998 Greens Overseed Trials. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>			
	<u>DEC 97</u>	<u>JAN 98</u>	<u>FEB 98</u>	<u>WINTER AVG</u>
Turfstar Plus	6.5	7.5	7.0	7.0
Cat/wntprly	5.5	8.0	6.5	6.7
Premier II	6.0	6.5	7.5	6.7
95-1	5.3	6.8	7.8	6.6
Brightstar II	5.0	5.5	8.0	6.2
PT-4	4.3	5.5	6.0	5.3
Saratoga	3.8	5.8	5.5	5.0
Snowbird	3.3	4.5	5.3	4.3
Check	1.0	N.A.	1.3	1.1
TEST MEAN ³	0.9	6.3	6.1	5.4
LSD VALUE ⁴	0.7	1.2	1.0	0.7

¹Values are the mean of four replications.

²Turfgrass quality (1-9), 1=dead 9=best possible.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 6. Mean¹ turfgrass quality scores² Spring 1997-1998 Greens Overseed Trials. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>			
	<u>MAR 98</u>	<u>APR 98</u>	<u>MAY 98</u>	<u>SPRING AVG</u>
Premier II	6.8	7.0	6.5	6.8
Brightstar II	7.0	6.3	5.8	6.3
95-1	7.0	5.8	5.5	6.1
Turfstar Plus	5.3	6.0	6.0	5.8
Cat/wntreply	5.5	4.5	5.8	5.3
Saratoga	5.0	4.3	5.0	4.8
PT-4	4.5	3.8	4.3	4.2
Check	2.5	N.A.	5.8	4.1
Snowbird	4.8	3.5	3.5	3.9
TEST MEAN ³	5.4	5.1	5.3	5.2
LSD VALUE ⁴	0.8	1.3	1.6	0.9

¹Values are the mean of four replications.

²Turfgrass quality (1-9), 1=dead 9=best possible.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 7. Mean¹ turfgrass texture scores² 1997-1998 Greens Overseed Trials. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>		
	<u>JAN 98</u>	<u>MAR 98</u>	<u>WINTER AVG</u>
Cat/wntprply	8.5	6.0	7.3
Premier II	6.5	7.0	6.8
Turfstar Plus	7.0	6.5	6.8
95-1	6.5	6.8	6.6
Saratoga	7.3	5.5	6.4
PT-4	7.0	5.3	6.1
Snowbird	6.8	5.3	6.0
Brightstar II	5.0	6.5	5.8
Check	N.A.	N.A.	N.A.
TEST MEAN ³	6.8	6.1	6.5
LSD VALUE ⁴	1.0	0.7	0.7

¹Values are the mean of four replications.

²Turfgrass texture scores . (1-9), 1=very coarse 9=very fine.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 8. Mean¹ turfgrass uniformity scores² Fall 1997-1998 Greens Overseed Trials. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>		
	<u>FEB 98</u>	<u>MAR 98</u>	<u>WINTER AVG</u>
Brightstar II	7.3	6.0	6.6
95-1	7.3	5.0	6.1
Saratoga	5.5	6.0	5.8
Premier II	6.3	5.0	5.6
Cat/wntprply	5.3	5.3	5.3
PT-4	5.5	5.0	5.3
Snowbird	4.8	5.5	5.1
Turfstar Plus	5.5	4.5	5.0
Check	2.5	3.5	3.0
TEST MEAN ³	5.6	5.1	5.3
LSD VALUE ⁴	1.5	1.2	1.2

¹Values are the mean of four replications.

²Turfgrass uniformity (1-9), 1=dead 9=best possible.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 9. Mean¹ turfgrass uniformity scores² Spring 1997-1998 Greens Overseed Trials. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>		
	<u>APR 98</u>	<u>MAY 98</u>	<u>SPRING AVG</u>
Premier II	6.0	6.8	6.4
Turfstar Plus	6.0	6.3	6.1
Brightstar II	5.5	5.5	5.5
Check	N.A.	5.5	5.5
Cat/wntprply	4.8	6.0	5.4
95-1	5.0	5.0	5.0
Saratoga	4.3	5.0	4.6
PT-4	3.8	4.8	4.3
Snowbird	3.8	3.8	3.8
TEST MEAN ³	4.9	5.4	5.2
1.3	N.A.	1.4	

¹Values are the mean of four replications.

²Turfgrass uniformity (1-9), 1=dead 9=best possible.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.

Table 10. Mean¹ turfgrass winter density scores² 1997-1998 Greens Overseed Trials. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>DATE</u>		
	<u>JAN 98</u>	<u>FEB 98</u>	<u>WINTER AVG</u>
Cat/wntprly	8.3	8.0	8.1
Turfstar Plus	7.8	7.3	7.5
95-1	6.8	7.5	7.1
PT-4	6.8	7.5	7.1
Premier II	7.0	7.0	7.0
Saratoga	7.0	6.8	6.9
Brightstar II	5.5	6.8	6.1
Snowbird	5.5	6.5	6.0
Check	1.0	1.0	1.0
TEST MEAN ³	6.8	6.5	6.4
LSD VALUE ⁴	1.1	1.3	0.9

¹Values are the mean of four replications.

²Turfgrass texture scores. (1-9), 1=dead 9=very dense.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than theLSD value are statistically different from each other.

Table 11. Mean¹ percent plot cover of cool season overseed² turf at initial transition, May 31, 1998. Overseed Greens Trial. University of Arizona, Karsten Turfgrass Research Facility.

<u>ENTRY</u>	<u>% Plot WITH LIVE OVERSEED TURF</u>
Premier II	58
Catalina/Winterplay	55
Saratoga	50
Brightstar II	49
Turfstar Plus	49
PT - 4	45
95 - 1	45
Snowbird	33
Check	0
TEST MEAN ³	44
LSD VALUE ⁴	13

¹Values are the mean of four replications.

²Percent Overseed = (0-100%) plot cover, of cool season overseed grass.

³Mean of all entries.

⁴LSD Mean Separation Statistic. Entries whose mean values differ numerically by more than the LSD value are statistically different from each other.