

2006 2007 Fairway Overseeding Trials

University of Arizona

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Abstract

Forty nine seeded entries were overseeded into Tifway bermudagrass maintained at 5/8" inch. Improved annuals showed better turf performance in most categories than GULF annual, while hybrid(intermediate ryegrasses) showed great improvement over original release material.

Annuals and hybrids were more vigorous in plot establishment after emergence until late November/early December, when perennial types increased plot cover. Poa trivialis was slower to emerge than other grasses, but had excellent performance in the coldest parts of the winter season, only to decline early in the spring for overall turfgrass quality.

Turfgrass color scores were greatest on 17 February and 27 March. On 17 February, the mean color scores ranged from a low value for Gulf annual (4.0), to the Jacklin blend which averaged 8.5 (Table 3). Other darker entries included the PHD blend (8.0), B-5.1095 ryegrass (8.0), B-6.1523 ryegrass (8.0) Pick EJ ryegrass (8.0), B-6.1523 (8.0), Brea ryegrass (7.8), Pavilion ryegrass (7.8), RX ryegrass blend (7.8), Acapella ryegrass (7.8) Ringer II (7.8) and PM 102 ryegrass (7.8)

Physical mowing stress was evident on 2 May, in which grasses exhibited leaf tip shredding and elongated flowering culms. Gulf and Panterra annual aul ryegrass showed the least favorable mowing response. STR 4NV (intermediate ryegrass) had mow stress-type symptoms similar to perennial ryegrass, which was much less than that of the annual types.

On 19 June, bermudagrass plot cover ranged from 17.5% (Laser PT) to 100% cover on several other entries. The Rx ryegrass blend, Bar LM TL annual ryegrass, Leaguemaster blend, and Heat PR all had 100% bermudagrass cover. The non-overseeded checks had 95% bermudagrass on 19 June. There were nine entries with 90% or more bermudagrass, ten entries that had 80-85% bermuda, four entries that had between 85-90% Bermuda, and sixteen entries with 75% or less bermudagrass on 19 June. The Champion Fine mixture had 55% bermudagrass. PHD had 63%. Pavilion had 63% bermuda as well. The Poa trivialis entries had the least amount of bermudagrass present.

ENtries which had high quality scores on average throughout the entire test period (early November to July 12 included the entire, Champion RB (mixture of creeping red fescue and perennial ryegrass) (6.8); Champion GC (mixture of fine fescue and perennial ryegrass) (6.8); the experimental ryegrass B-6.1523 (6.7); Jacklin Blend A (6.7); the experimental ryegrass B-6.1091 (6.9); and B-6.0756 (6.8);

Entries which had generally throughout the entire season had good quality and high amounts of bermudagrass on 19 June included Heat (100%), STR 4TPC

(93%), STR 4QT (90%), RX (100%), Jacklin Blend A (88%), B-6.1095 (95%), and Champion STF (98%).

Other entries had a quicker transition, but had lower mean quality scores otherwise, while others had high quality scores, but a slower transition.

Introduction

Bermudagrass will not retain full year round color in the desert southwest. There is a noticeable variation in fall/winter color retention among bermudagrass. Midiron typically enters fall dormancy early, partly as a function of filling its robust rhizomes with food reserves for the following spring. Other varieties such as Tifsport and Celebration will hold their color until 2 or 3 repeated frosts occur. Overseeding bermudagrass with perennial ryegrass has been common practice for 50 years, with annual ryegrass first used, then largely replaced by “Linn” perennial ryegrass. The first perennial ryegrass developed for overseeding was “Caravelle”, a dark green, late maturing variety with little heat tolerance. This cultivar was used from the early 1970’s until the 1980’s, when better seed yielding cultivars and production cost issues forced Caravelle out of the market place. Depending on market conditions and niches, seed companies may develop cultivars of perennial ryegrass for overseeding purposes. With this in mind, the 2006-2007 overseed trials were established for evaluating germplasm for overseeding bermudagrass at fairway heights in a desert climate.

Materials and Methods

A nine year old stand of Tifway 419 mowed regularly at 5/8’ was dried and scalped for overseed on October 2, 2006. Perennial ryegrass cultivars, blends, and mixtures were included in the test, as well as *Poa trivialis* and intermediate ryegrass. Ryegrasses were seeded at 650 lb. PLS/Acre, with *Poa trivialis* seeded at 150 lbs/acre. Gulf annual ryegrass was included, as well as a non-overseeded control (scalped only). Forty nine seeded entries were included.

Plots were mowed at 5/8” after reaching 1.0 inch in height, and were mowed 3x weekly at this height until the conclusion of the test on 19 June, 2007. The test was irrigated to avoid stress at all times to allow a natural spring transition based on cultivar performance only. Data collected included plot composition components at establishment and transition, turfgrass color, quality, density, and texture when applicable using the NTEP visual scale of 1-9, where 1 = dead turf, 5 = marginal, 6 = fully acceptable, 9 = ideal. Color scores used the 1-9 scale also, whereby higher values denote darker inherent color. Color scores of 3.0 or less indicate a problematic stress situation, whereby scores of 4.0 = extremely light pea green, all the way to 9.0 = forest green. All data were subjected to the analysis of variance technique. LSD values were calculated for use as the treatment mean separation statistic only if the “treatment” main effect was significant at the probability level of P=0.05, or less. Extreme

performers in tables (high and low treatment means) are listed in color (blue / red) for viewing the ranges in extremes.

Results and Discussions

Emergence and early season performance:

Turfgrass vigor scores (1-9, where 9 = best) were assigned to plots on 1 and 10 November. The overall test mean was 2.2 (slight vigor), and 3.7 (near moderate vigor) on those dates, respectively (Table 1). Gulf annual had tremendous seedling vigor (5.3), followed by “Axcella 2” annual ryegrass on 1 November. The three *Poa trivialis* entries were slow to emerge and had little top growth, and had the least vigorous turfs on 1 November (1.0) and again on 10 November (average = 1.8 mean vigor score). The mixture of Peak/Panterra (perennial/annual) averaged 4.8, as did Bar Lna TL annual ryegrass, and Panterra annual ryegrass. Next was the Showboat/Axcella mixture (4.5). The most vigorous ryegrasses included STR 4NV (4.5), XLT-5 (4.5) and Heat (4.5). Sprint annual ryegrass averaged 5.5 for vigor on 10 November (Table 1).

Percent plot overseed cover ranged from 1% to 33% plot cover on 1 November, and from 41% to 97% on 10 November (Table 2). From 1 November to 10 November, many perennial ryegrass entries surpassed the annual and intermediate ryegrass entries in percent plot cover. The annuals and some intermediates produced a more upright turf with noticeably high leaf elongation rates, which results in more leaf material removed by mowing. The perennial ryegrasses tended to have much lower elongation rates and more tillering. The *Poa trivialis* entry RB3-39 had the greatest amount of overseed cover, due to fair emergence and a high seed count per inch (Table 2).

By 13 December, certain entries increased their visible plot cover, while others decreased (after frosts and shorter day lengths occurred). On 13 December, Laser PT had the largest percent plot cover (97%), followed by the improved annual Axcella 2 (91%) and the Showboat/Axcella mixture (91%) (Table 2).

Soon after emergence, the inherent genetic color of the grasses was evident. On 10 November, the range in treatments for color ranged from 4.5 (06.0438 and Laser *Poa trivialis*) to 7.8 (for B6.1091 perennial ryegrass). Other entries with mean color scores of 7.0 or greater included, Pick EJ (7.3), PM 102 (7.3) Heat (7.0), Brea (7.3), Ringer 11 (7.0), B-6.1095 (7.3), B-6.0766 (7.0), Par 5 (7.0), Jacklin Blend A (7.3), Champion STF (7.0), Acapella (7.0), and PHD (7.3) (Table 3).

On 22 November, B-6.1095 and Fiesta 4 were ranked highest for color (7.5), while Gulf annual was extremely pale green (3.0) (Table 3).

By December 13, cold nights had occurred, but color was still improving among most entries. PHD, Jacklin Blend #1 and Ringer II all had mean color scores of 7.5 (Table 3). Pick EJ and Acapella averaged 7.0 and 7.3 respectively for color on 13 December.

Overall turfgrass quality scores ranged from 3.3 (Gulf annual) to 7.3 for B-6.1091 on 10 November. (Table 4). There were twenty entries which had mean quality scores of 6.0 or greater on 10 November. The Poa trivialis entries were slow to establish and thus had moderately low initial quality scores. Axcella 2 annual ryegrass had low quality scores as well (3.8, 4.3, 5.8) for 10 November, 22 November, and 13 December, respectively).

On 22 November, RB3-99 Poa trivialis and PM 102 perennial ryegrass had mean quality scores of 7.5, followed by Fiesta 4, Laser PT, and B6.1091 perennial ryegrass (all with scores of 7.3). There were eight entries with mean quality scores of less than 5.0 at this time (Table 4).

On 13 December, the cold night temperatures which decreased overall growth and vigor, now caused (for the most part) a decrease in overall turf quality as the overall test mean value was 4.9. Overseeded plots varied in quality from 3.3 (Gulf annual) to 7.8 (Laser PT). RB-399 PT was next with a mean quality score of 7.0. There were only two entries with mean quality scores between 6.0 and 7.0, and twenty with mean quality scores of 5.0 to 6.0 on 13 December (Table 4).

All things considered, for the first two months after planting, the Poa trivialis entries were low in initial quality due to slow germination and low initial species vigor, but they generally progressed nicely during, up to, and including the cold weather. Annual ryegrasses, or mixtures with annual were quick to germinate and provide cover, but had lower mean quality scores. Perennial ryegrasses and blends and component mixtures were intermediate.

Late Winter, Spring and Transition:

With the return of warmer daytime temperatures, grasses returned to near ideal appearance. The maximum expression of inherent leaf width (texture) occurred in February and March. Entries with the most narrow leaves throughout 95% of their canopy included Acapella and Brea perennial ryegrasses, as well as 06.0438 PT. These entries had mean texture scores of 8.0 on 17 February. These entries were followed next by the Champion RB (mixture) (7.8), B-6.0755 perennial ryegrass, Americus perennial ryegrass, and Fiesta 4 perennial ryegrass, along with 0-6.0350 PT, Laser PT and RB3-99 PT. It's amazing to see a perennial ryegrass that is so fine in texture like Acapella and Fiesta 4 (Table 1). The more broad-leaf types included Gulf annual (3.3). Sprint perennial ryegrass was moderate in leaf texture (5.0), a noticeable improvement over that of Gulf (Table 1).

Turfgrass density scores ranged from 5.3 (Gulf annual) to 9.0 (Brea PR, and 0-6.0438 PT) on 17 February. There were eight entries which had mean density scores of 8.0 or more on 17 February which included Champion RB

mixture, (8.3) Champion Fine mixture (8.5), Champion STF mixture (8.0), Pavilion ryegrass (8.0), Brea perennial rye (9.0), 0-6.0438 PT, Laser PT, RB 3-99 PT (all with density = 9.0), and 0-6.0350 PT (8.5). Weather conditions in February were typically superb for cool season grasses (Table 1).

Turfgrass color scores were greatest on 17 February and 27 March. On 17 February, the mean color scores ranged from a low value for Gulf annual (4.0), to the Jacklin blend which averaged 8.5 (Table 3). Other darker entries included the PHD blend (8.0), B-5.1095 ryegrass (8.0), B-6.1523 ryegrass (8.0) Pick EJ ryegrass (8.0), B-6.1523 (8.0), Brea ryegrass (7.8), Pavilion ryegrass (7.8), RX ryegrass blend (7.8), Acapella ryegrass (7.8) Ringer II (7.8) and PM 102 ryegrass (7.8)

Color scores were maintained on stress free turf into March, with again ideal growing conditions. Both Axcella 2 and Gulf annual ryegrasses were the most light green in color (4.0), while Pick EJ was again included with the darkest group of grasses (color = 8.3). Entries which included PM102, Par-5, and Champion STF were all similar with high mean color scores of 8.0 or greater on March 27. The *Poa trivialis* entries were lighter for the most part in March as opposed to February (Table 3).

Overall turfgrass quality scores were very good to excellent in February and March. On February 17, the ryegrass B-6.1523 and 0-6.0438 PT had mean quality scores of 8.3, followed closely by RB 3-99 PT (8.0), 0-6.0438 PT (8.0), Pavilion (8.0), STR4QT (8.0), and Champion STF Mixture (8.0). Axcella 2 annual ryegrass averaged 5.5 (Table 4), while Panterra annual ryegrass averaged (5.3). On 27 March, mean quality scores ranged from 3.3 (Gulf) to 8.3 (B-6.1091 perennial ryegrass). Other entries with mean quality scores of 8.0 included B-6.0756, B-6.1523, Jacklin Bend A, Champion Fine Mixture, Champion RB mixture and Heat.

Transition Performance:

Hot daytime temperatures occurred in May, but with cool nights generally in the 50F range. On 2 May, mean quality scores generally decreased slightly as expected from March, especially for the *Poa trivialis* entries which were now 3.8 in quality, as was both Gulf and Axcella 2 annual ryegrass (3.8). The mixture of Champion GQ ranked first for early May quality (7.8), followed by STR 4TPC (7.5), Champion fine mixture (7.5), STR 4TPC (7.5), Jacklin Blend 1 (7.3) and B-6.0756 ryegrass (7.3). The non-overseeded ryegrass was starting to green up (quality = 3.3) on 2 May (Table 4).

On 2 May, mean color scores ranged from 3.8 to 7.8 (Table 3). Par 5 and PM 102 ranked numerically highest at 7.8, along with PM 102 (7.8). Pick EJ, Fiesta 4, Ringer II, and PHD Ryegrass blend all had mean color scores of 7.5 (Table 3). Eight other entries had mean color scores of 7.0 to 7.4 on 2 May (Table 3). Eight entries had mean color scores of 4.0 or less on 2 May. Again, color scores are an estimate of hue, and quality should be observed for transition, rather than color alone.

Physical mowing stress was evident on 2 May, in which grasses may exhibit leaf tip shredding and elongated flowering culms which are difficult to mow. Annual ryegrass and hybrid ryegrass will attempt to elongate seed heads more so than perennial ryegrass. Mow stress scores were assigned to plots using a visual scale of 1 - 6, where 1 = no stress, 3 = slight to moderate stress, 5 = moderate-severe, and 6 = severe stress (Table 1). Gulf annual averaged 3.8 (moderate stress), followed by Panterra annual (3.5), Axcella 2 (3.5), Bar LM TL annual (3.3), Peak Panterra mixture (2.8), and the Showboat Axcella blend (2.5). STR 4NV (intermediate had mow stress-type symptoms similar to perennial ryegrass, which was much less than that of the annual types (Table 1).

For initial spring transition, the percent plot bermuda on 7 June ranged from 16% (Laser), to 86% bermuda (Bar LM TL annual). Gulf had 76% bermudagrass, with the rest being still living annual ryegrass. Axcella 2 was 85% bermudagrass on 7 June (Table 2). Pavillion perennial ryegrass was 45% bermudagrass, and Pick EJ was 48% bermudagrass. The range in bermudagrass cover among perennial ryegrass entries was from 45% (PHD blend) to 76%, (Heat). Other perennial ryegrass entries with large amounts of bermudagrass included Pleasure Plus (73%), Rx2 (73%), and Americus (73%).

On June 19, plots with noticeable amounts of dead overseed grass included Axcella 2 annual (8%), Peck/Panterra mixture (8%), Sprint annual (20%), and Laser (33%). Gulf annual had begun its transition earlier, and was showing large amounts of Bermuda. This data shows that even the improved annual ryegrasses differ in their transition and the amount of dead tissue (or not) that is evident during the process varies within the annuals, perennials, and hybrids (Table 1).

On 19 June, bermudagrass plot cover ranged from 17.5% (Laser PT) to 100% cover on several other entries. The Rx ryegrass blend, Bar LM TL annual ryegrass, Leaguemaster blend, and Heat PR all had 100% bermudagrass cover (Table 2). The non-overseeded checks had 95% bermudagrass on 19 June. There were nine entries with 90% or more bermudagrass, ten entries that had 80-85% bermuda, four entries that had between 85-90% Bermuda, and sixteen entries with 75% or less bermudagrass on 19 June (Table 2). The Champion Fine mixture had 55% bermudagrass. PHD had 63%. Pavilion had 63% bermuda as well. The Poa trivialis entries had the least amount of bermudagrass present, and also from notes had considerable straw (in the case of Laser).

Final quality scores were assigned on May 31, 2007. The STR 4TPC perennial ryegrass had excellent quality (7.8), followed by the Champion GQ mixture (7.3), STR 4 SLT, (7.3) and Heat (7.3)

Entries which had generally throughout the entire season had good quality and high amounts of bermudagrass on 19 June included Heat (100%), STR 4TPC (93%), STR 4QT (90%), RX (100%), Jacklin Blend A (88%), B-6.1095 (95%), and Champion STF (98%).

Other entries had a quicker transition, but had lower mean quality scores otherwise, while others had high quality scores, but a slower transition.

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Tables :

Key Search words: overseed hybrid ryegrass annual Gulf Tifway fairway 5/8 transition establishment color quality density texture

Table 1. Winter Overseed Trial Fall 2006 - Spring 2007, University of Arizona.			13-Dec	19-Jun	17-Feb	27-Mar	31-May	1-Nov	10-Nov	17-Feb	31-May	2-May
Entry	Grass Type	Component	%-Straw/berm	%-Bare/Straw	Texture	Texture	Uniformity	Vigor	Vigor	Density	Density	Mow Stress
Nitro	Int. Rye	100% Nitro	21.3	0.0	6.0	6.3	6.3	3.3	4.3	6.3	7.0	1.0
Showboat/Axcella	Ann. Rye	50% / 50%	8.8	5.0	5.0	4.5	4.5	2.8	4.5	6.0	6.0	2.5
PHD Blend	Per. Rye	All*Star 3 / Derby Extreme / Regal 5	11.3	0.0	6.8	6.8	4.8	2.5	3.8	7.3	6.8	1.3
Ignite	Per. Rye	100% Ignite	28.8	0.0	6.8	6.3	6.3	1.8	3.8	7.0	8.0	1.3
Axcella 2	Ann. Rye	100% Axcella 2	8.8	7.5	5.0	4.5	4.8	4.3	4.8	6.8	5.5	3.5
Champion RB	Mixture	30% SRX 55R SCR / 70% Champion PR	15.0	0.0	7.8	8.0	7.0	2.8	4.0	8.3	7.5	1.0
STR 4TPC	Per. Rye	100% Per. Rye	16.3	0.0	6.8	7.3	6.8	1.5	4.3	7.3	8.0	1.0
Champion Fine	Mixture	30% CF / 70% Champion	13.8	0.0	7.8	7.8	5.8	2.3	3.3	8.5	7.8	1.0
Champion GQ	Mixture	SR 4600 / Harrier / SR 4550	22.5	0.0	7.0	7.3	6.8	3.5	3.8	7.0	7.3	1.0
STR 45AB4	Per. Rye	100% Per. Rye	28.8	0.0	6.0	5.8	6.3	1.3	4.5	6.0	7.5	1.3
Champion STF	Mixture	30% SR 5250 SCR / 70% Champion PR	11.5	0.0	7.8	7.3	5.5	2.0	3.5	8.0	7.3	1.0
Acapella	Per. Rye	100% Per. Rye	20.0	0.0	8.0	7.5	6.3	2.0	3.5	6.8	7.8	1.0
STR 4QT	Per. Rye	100% Per. Rye	13.8	0.0	6.5	6.5	5.8	1.0	3.8	7.3	7.3	1.0
STR 4SLT	Per. Rye	100% Per. Rye	12.5	0.0	7.3	7.0	7.0	2.8	3.8	6.8	7.5	1.0
STR 4NV	Int. Rye	100% Int. Rye	23.8	0.0	6.0	5.5	5.5	1.5	4.5	6.0	7.5	1.5
AM-27	Per. Rye	100% Per. Rye	31.3	0.0	6.8	6.3	5.8	1.8	3.8	6.0	6.8	1.3
Pleasure +	Per. Rye	100% Per. Rye	23.3	0.0	6.8	6.3	6.0	2.5	4.3	6.3	7.8	1.3
XLT-5	Per. Rye	100% Per. Rye	17.5	1.0	6.5	6.3	6.8	2.5	4.5	7.3	7.0	1.0
Rx	Per. Rye	Blend	20.0	0.0	7.8	7.0	6.0	2.8	3.3	7.3	7.3	1.0
Par 5	Per. Rye	Blend	20.0	2.5	7.3	7.0	6.0	2.5	3.3	7.8	7.0	1.0
Jacklin Blend #1	Per. Rye	Blend	13.5	0.0	7.0	7.3	6.0	2.0	3.8	7.5	7.3	1.0
Jacklin Blend #A	Per. Rye	Blend	18.8	0.0	7.3	7.3	6.3	1.8	3.8	7.0	7.8	1.0
Panterra / 05-LmTL-Syn	Ann. Rye	Blend	18.8	1.0	5.3	4.0	4.8	2.8	4.8	6.0	5.0	3.5
Bar-LmTL-Syn	Ann. Rye	100% Ann. Rye	12.5	0.0	5.0	4.5	4.0	2.0	4.8	6.0	5.3	3.3
Peak / Panterra	Mixture	Per. / Ann. Mixture	12.5	7.5	4.8	4.0	4.5	3.0	4.8	6.3	5.3	2.8
B-6.0766	Per. Rye	100% Per. Rye	15.0	0.0	7.5	7.3	5.8	2.0	3.5	6.5	7.3	1.3
B-6.1523	Per. Rye	100% Per. Rye	15.0	0.0	7.5	7.0	5.5	1.8	3.8	7.8	7.5	1.0
B-6.0755	Per. Rye	100% Per. Rye	22.5	0.0	7.8	6.5	5.5	1.0	3.0	7.3	7.5	1.0
B-6.0759	Per. Rye	100% Per. Rye	30.0	0.0	7.3	7.5	6.3	1.8	4.0	6.5	7.0	1.0
B-6.1095	Per. Rye	100% Per. Rye	21.3	2.5	7.5	6.8	5.3	1.3	3.5	7.3	7.0	1.0
B-6.1091	Per. Rye	100% Per. Rye	18.0	0.0	7.5	7.8	6.5	2.5	3.5	7.0	7.8	1.0
B-6.0756	Per. Rye	100% Per. Rye	13.8	0.0	7.8	7.5	6.0	1.3	3.5	7.5	7.5	1.3
Pavillion	Per. Rye	100% Per. Rye	17.5	0.0	7.5	7.3	5.5	3.3	3.5	8.0	7.3	1.0
Americus	Per. Rye	100% Per. Rye	20.0	0.0	7.5	7.8	7.3	2.5	4.0	6.5	8.3	1.3
Ringer II	Per. Rye	100% Per. Rye	16.3	0.0	6.5	6.8	6.8	1.5	4.3	6.5	7.5	1.0
Sprint turf type	Ann. Rye	100% Ann. Rye	16.3	20.0	5.0	4.3	4.3	4.3	5.5	6.5	4.8	2.8
League Master	Per. Rye	1/3 Ringer - 1/3 Brea - 1/3 Heat	25.0	0.0	7.0	7.5	5.8	2.0	4.0	7.0	7.5	1.0
Heat	Per. Rye	100% Per. Rye	21.3	0.0	6.8	7.0	5.5	2.3	4.5	6.8	7.0	1.0
Brea	Per. Rye	100% Per. Rye	21.3	0.0	7.3	7.5	6.5	2.3	3.8	7.3	7.8	1.0
O-6.0438	Poa triv.	100% PT	13.8	0.0	8.0	7.0	5.5	1.0	1.8	9.0	6.3	2.0
O-6.0350	Poa triv.	100% PT	7.8	2.5	7.8	7.0	5.3	1.0	1.8	8.5	6.3	1.8
Laser	Poa triv.	100% PT	2.8	32.5	7.8	7.5	4.8	1.3	1.8	9.0	5.5	1.8
RB 3-99	Poa triv.	100% PT	8.5	0.0	7.8	7.3	5.5	1.0	1.8	9.0	8.0	1.5
PM 102	Per. Rye	100% Per. Rye	23.8	0.0	7.3	6.5	5.8	1.8	4.3	6.8	7.3	1.0
Pick EJ	Per. Rye	100% Per. Rye	23.8	0.0	7.0	7.3	5.5	1.8	3.3	6.5	7.8	1.5
Fiesta 4	Per. Rye	100% Per. Rye	13.8	1.0	8.0	7.8	5.3	1.5	3.3	7.5	7.3	1.0
Blastoff	Per. Rye	Blend Unknown	20.0	0.0	7.5	7.5	5.8	2.5	3.8	7.3	7.3	1.3
Standard entry	Per. Rye	100% Per. Rye	21.3	0.0	6.8	6.8	6.0	3.0	4.0	7.3	6.5	1.5
Gulf	Ann. Rye	100% Ann. Rye	28.8	15.0	3.3	3.3	3.8	5.3	5.8	5.3	5.0	3.8
Non-seeded Control	---	---	97.3	0.0	2.0	2.0	5.5	1.0	1.0	2.0	6.5	1.5
Test Mean			19.6	2.0	6.8	6.5	5.7	2.2	3.7	7.0	7.0	1.4
LSD			9.6	8.9	0.9	1.0	1.5	0.9	0.7	1.2	1.2	0.6

Table 2. Winter Overseed Trial Fall 2006 - Spring 2007, University of Arizona.			7-Jun	19-Jun	1-Nov	22-Nov	13-Dec	25-May	7-Jun	19-Jun
Entry	Grass Type	Component	%-Berm	%-Berm	%-C3	%-C3	%-C3	%-C3	%-C3	%-C3
Nitro	Int. Rye	100% Nitro	72.5	90.0	7.5	67.5	78.8	23.8	27.5	10.0
Showboat/Axcella	Ann. Rye	50% / 50%	72.5	90.0	8.0	80.0	91.3	9.0	27.5	5.0
PHD Blend	Per. Rye	AllStar 3 / Derby Extreme / Regal 5	41.3	62.5	8.8	82.5	88.8	43.8	58.8	37.5
Ignite	Per. Rye	100% Ignite	73.8	82.5	5.8	82.5	71.3	23.8	26.3	17.5
Axcella 2	Ann. Rye	100% Axcella 2	85.0	92.5	17.5	66.3	91.3	2.8	15.0	0.0
Champion RB	Mixture	30% SRX 55R SCR / 70% Champion PR	52.5	70.0	6.5	96.3	85.0	29.3	47.5	30.0
STR 4TPC	Per. Rye	100% Per. Rye	65.0	92.5	5.0	85.0	83.8	28.8	35.0	7.5
Champion Fine	Mixture	30% CF / 70% Champion	60.0	55.0	4.8	85.8	86.3	28.8	40.0	45.0
Champion GQ	Mixture	SR 4600 / Harrier / SR 4550	56.3	75.0	8.8	94.5	77.5	35.0	43.8	25.0
STR 45AB4	Per. Rye	100% Per. Rye	67.5	77.5	3.8	73.8	71.3	20.0	32.5	22.5
Champion STF	Mixture	30% SR 5250 SCR / 70% Champion PR	65.0	97.5	11.5	93.8	88.5	23.8	35.0	2.5
Acapella	Per. Rye	100% Per. Rye	67.5	82.5	5.8	88.8	80.0	38.8	32.5	17.5
STR 4QT	Per. Rye	100% Per. Rye	70.0	90.0	3.5	86.3	86.3	31.3	30.0	10.0
STR 4SLT	Per. Rye	100% Per. Rye	66.3	72.5	8.0	80.0	87.5	35.5	33.8	27.5
STR 4NV	Int. Rye	100% Int. Rye	73.8	70.0	3.0	63.8	76.3	17.5	26.3	30.0
AM-27	Per. Rye	100% Per. Rye	67.5	80.0	2.8	66.3	68.8	33.5	32.5	20.0
Pleasure +	Per. Rye	100% Per. Rye	72.5	82.5	5.8	58.8	76.8	21.3	27.5	17.5
XLT-5	Per. Rye	100% Per. Rye	66.3	61.5	14.3	76.3	82.5	22.5	33.8	37.5
Rx	Per. Rye	Blend	72.5	100.0	8.8	87.5	80.0	31.3	27.5	0.0
Par 5	Per. Rye	Blend	65.0	75.0	4.8	78.8	80.0	45.0	35.0	22.5
Jacklin Blend #1	Per. Rye	Blend	65.0	70.0	8.3	83.3	86.5	41.8	35.0	30.0
Jacklin Blend #A	Per. Rye	Blend	60.0	87.5	3.8	95.8	81.3	34.5	40.0	12.5
Panterra / 05-LmTL-Syn	Ann. Rye	Blend	80.0	97.5	7.5	55.0	81.3	4.5	20.0	1.5
Bar-LmTL-Syn	Ann. Rye	100% Ann. Rye	86.3	100.0	8.0	62.5	87.5	4.3	13.8	0.0
Peak / Panterra	Mixture	Per. / Ann. Mixture	71.3	85.0	10.0	72.5	87.5	12.3	28.8	7.5
B-6.0766	Per. Rye	100% Per. Rye	62.5	85.0	6.8	87.5	85.0	30.0	37.5	15.0
B-6.1523	Per. Rye	100% Per. Rye	56.3	77.5	6.8	82.5	85.0	28.8	43.8	22.5
B-6.0755	Per. Rye	100% Per. Rye	62.5	87.5	2.8	76.3	77.5	33.8	37.5	12.5
B-6.0759	Per. Rye	100% Per. Rye	55.0	72.5	3.8	91.3	70.0	23.8	45.0	27.5
B-6.1095	Per. Rye	100% Per. Rye	68.8	95.0	4.8	92.0	78.8	28.8	31.3	2.5
B-6.1091	Per. Rye	100% Per. Rye	68.8	95.0	5.8	95.0	82.0	27.5	31.3	5.0
B-6.0756	Per. Rye	100% Per. Rye	52.5	77.5	3.3	92.5	86.3	28.8	47.5	22.5
Pavillion	Per. Rye	100% Per. Rye	45.0	62.5	8.3	92.5	82.5	36.3	55.0	37.5
Americus	Per. Rye	100% Per. Rye	72.5	80.0	5.0	77.5	80.0	29.5	27.5	20.0
Ringer II	Per. Rye	100% Per. Rye	50.0	79.0	3.3	88.8	83.8	42.5	50.0	21.0
Sprint turf type	Ann. Rye	100% Ann. Rye	60.0	80.0	16.3	41.3	83.8	3.3	40.0	0.0
League Master	Per. Rye	1/3 Ringer - 1/3 Brea - 1/3 Heat	60.0	100.0	5.8	80.0	75.0	32.5	40.0	0.0
Heat	Per. Rye	100% Per. Rye	76.3	100.0	14.3	85.8	78.8	30.0	23.8	0.0
Brea	Per. Rye	100% Per. Rye	62.5	82.5	9.0	81.3	78.8	32.5	37.5	17.5
O-6.0438	Poa triv.	100% PT	30.3	25.0	1.0	88.8	86.3	40.0	69.8	75.0
O-6.0350	Poa triv.	100% PT	20.0	20.0	1.0	87.5	92.3	45.0	80.0	77.5
Laser	Poa triv.	100% PT	16.3	17.5	1.8	94.5	97.3	37.5	83.8	50.0
RB 3-99	Poa triv.	100% PT	25.0	40.0	1.0	96.5	91.5	43.3	75.0	60.0
PM 102	Per. Rye	100% Per. Rye	56.3	76.5	3.8	90.0	76.3	36.3	43.8	23.5
Pick EJ	Per. Rye	100% Per. Rye	47.5	57.5	3.5	83.8	76.3	40.0	52.5	42.5
Fiesta 4	Per. Rye	100% Per. Rye	58.8	71.5	6.8	93.8	86.3	48.8	41.3	27.5
Blastoff	Per. Rye	Blend Unknown	57.5	65.0	8.8	83.8	80.0	33.8	42.5	35.0
Standard entry	Per. Rye	100% Per. Rye	78.8	89.0	14.5	83.8	78.8	29.5	21.3	11.0
Gulf	Ann. Rye	100% Ann. Rye	76.3	82.5	32.5	45.0	71.3	7.3	23.8	2.5
Non-seeded Control	---	---	87.5	95.0	0.5	0.0	2.8	16.3	12.5	5.0
Test Mean			62.0	77.1	7.0	79.5	80.4	28.6	38.0	21.0
LSD			22.3	20.5	6.3	15.7	9.6	16.6	22.3	21.1

Table 3. Winter Overseed Trial Fall 2006 - Spring 2007. University of Arizona.			10-Nov	22-Nov	13-Dec	17-Feb	27-Mar	2-May	31-May
Entry	Grass Type	Component	Color	Color	Color	Color	Color	Color	Color
Nitro	Int. Rye	100% Nitro	6.0	5.0	5.8	6.0	6.0	5.5	5.5
Showboat/Axcella	Ann. Rye	50% / 50%	5.5	5.8	6.5	6.0	4.8	5.0	4.5
PHD Blend	Per. Rye	AllStar 3 / Derby Extreme / Regal 5	7.3	5.8	7.5	8.0	7.5	7.5	7.3
Ignite	Per. Rye	100% Ignite	5.8	5.8	6.0	6.3	6.3	6.0	5.8
Axcella 2	Ann. Rye	100% Axcella 2	5.5	5.8	5.5	5.5	4.0	4.3	4.0
Champion RB	Mixture	30% SRX 55R SCR / 70% Champion PR	6.8	7.0	6.5	6.8	6.3	6.3	5.8
STR 4TPC	Per. Rye	100% Per. Rye	6.8	5.8	5.8	6.5	6.5	6.0	6.3
Champion Fine	Mixture	30% CF / 70% Champion	6.3	6.0	6.5	7.5	6.5	6.0	6.5
Champion GQ	Mixture	SR 4600 / Harrier / SR 4550	6.8	5.5	6.5	7.0	7.3	7.0	6.5
STR 45AB4	Per. Rye	100% Per. Rye	5.5	5.3	5.0	6.5	6.0	6.0	5.0
Champion STF	Mixture	30% SR 5250 SCR / 70% Champion PR	7.0	6.3	6.8	6.8	6.0	6.3	6.3
Acapella	Per. Rye	100% Per. Rye	7.0	6.8	7.3	7.8	8.3	7.3	6.3
STR 4QT	Per. Rye	100% Per. Rye	6.0	5.3	6.5	6.5	6.5	6.0	6.3
STR 4SLT	Per. Rye	100% Per. Rye	5.0	4.3	5.8	6.5	6.3	6.3	5.8
STR 4NV	Int. Rye	100% Int. Rye	5.0	5.0	5.5	5.8	5.5	5.5	5.3
AM-27	Per. Rye	100% Per. Rye	7.3	5.0	5.5	7.3	7.3	6.0	6.0
Pleasure +	Per. Rye	100% Per. Rye	6.0	5.0	5.8	6.3	6.8	5.8	5.8
XLT-5	Per. Rye	100% Per. Rye	6.0	5.3	6.0	6.5	6.3	6.0	5.8
Rx	Per. Rye	Blend	6.8	5.8	5.8	7.8	7.8	7.0	6.3
Par 5	Per. Rye	Blend	7.0	5.8	6.8	7.5	8.0	7.8	7.3
Jacklin Blend #1	Per. Rye	Blend	7.3	5.8	7.5	8.5	7.5	7.3	7.0
Jacklin Blend #A	Per. Rye	Blend	7.0	7.0	6.8	7.5	7.5	6.8	6.3
Panterra / 05-LmTL-Syn	Ann. Rye	Blend	5.8	4.8	5.8	4.8	4.5	4.5	3.5
Bar-LmTL-Syn	Ann. Rye	100% Ann. Rye	5.8	4.8	5.3	4.8	4.8	5.0	4.0
Peak / Panterra	Mixture	Per. / Ann. Mixture	5.3	5.0	6.0	5.3	5.3	4.8	4.3
B-6.0766	Per. Rye	100% Per. Rye	6.5	6.0	6.3	7.3	7.0	7.0	6.3
B-6.1523	Per. Rye	100% Per. Rye	7.0	6.0	6.8	8.0	6.8	6.5	6.3
B-6.0755	Per. Rye	100% Per. Rye	6.8	6.0	6.0	7.5	7.0	7.3	6.3
B-6.0759	Per. Rye	100% Per. Rye	5.8	6.5	5.5	7.0	7.5	6.8	6.3
B-6.1095	Per. Rye	100% Per. Rye	7.3	7.5	6.5	8.0	7.5	6.5	6.3
B-6.1091	Per. Rye	100% Per. Rye	7.8	7.0	6.5	7.5	7.3	6.5	6.3
B-6.0756	Per. Rye	100% Per. Rye	6.5	6.3	6.8	8.0	7.5	6.8	6.5
Pavillion	Per. Rye	100% Per. Rye	6.3	5.8	6.5	7.8	7.5	7.0	6.5
Americus	Per. Rye	100% Per. Rye	6.8	6.0	6.3	7.0	7.8	6.8	6.3
Ringer II	Per. Rye	100% Per. Rye	7.0	6.8	7.5	7.8	7.3	7.5	6.5
Sprint turf type	Ann. Rye	100% Ann. Rye	5.0	3.3	4.8	4.8	4.5	4.3	3.3
League Master	Per. Rye	1/3 Ringer - 1/3 Brea - 1/3 Heat	6.8	6.8	6.8	6.5	6.5	6.8	6.0
Heat	Per. Rye	100% Per. Rye	7.0	7.0	6.8	7.0	7.5	6.8	5.8
Brea	Per. Rye	100% Per. Rye	7.3	6.3	6.8	7.8	7.8	7.0	6.5
O-6.0438	Poa triv.	100% PT	4.5	5.0	4.5	5.0	4.5	4.0	5.0
O-6.0350	Poa triv.	100% PT	5.0	5.0	5.0	5.3	4.5	4.0	4.0
Laser	Poa triv.	100% PT	4.5	5.0	5.0	5.0	4.3	4.0	4.0
RB 3-99	Poa triv.	100% PT	4.8	4.8	5.0	4.3	4.5	3.8	5.5
PM 102	Per. Rye	100% Per. Rye	7.3	6.5	6.8	7.8	8.0	7.8	7.0
Pick EJ	Per. Rye	100% Per. Rye	7.3	6.0	7.0	8.0	8.3	7.5	6.5
Fiesta 4	Per. Rye	100% Per. Rye	6.8	7.5	6.8	7.3	8.0	7.5	7.0
Blastoff	Per. Rye	Blend Unknown	6.5	4.3	5.8	7.0	7.3	7.0	6.0
Standard entry	Per. Rye	100% Per. Rye	5.8	5.0	5.3	6.3	6.3	6.0	5.8
Gulf	Ann. Rye	100% Ann. Rye	4.8	3.0	4.0	4.0	4.0	4.5	4.0
Non-seeded Control	---	---	3.0	1.8	1.0	1.8	2.3	4.8	5.3
Test Mean			6.2	5.6	6.0	6.6	6.4	6.1	5.8
LSD			1.4	1.4	1.0	1.2	0.9	1.0	0.9

Table 4. Winter Overseed Trial Fall 2006 - Spring 2007, University of Arizona.			10-Nov	22-Nov	13-Dec	17-Feb	27-Mar	2-May	31-May
Entry	Grass Type	Component	Quality						
Nitro	Int. Rye	100% Nitro	5.3	4.5	4.0	6.0	6.3	6.0	6.8
Showboat/Axocella	Ann. Rye	50% / 50%	4.8	5.8	6.3	6.3	4.5	4.5	4.5
PHD Blend	Per. Rye	All*Star 3 / Derby Extreme / Regal 5	5.3	6.3	5.5	7.5	7.3	6.0	5.5
Ignite	Per. Rye	100% Ignite	5.0	5.8	3.8	7.0	7.3	6.3	6.3
Axocella 2	Ann. Rye	100% Axocella 2	3.8	4.3	5.8	5.5	4.3	3.8	4.3
Champion RB	Mixture	30% SRX 55R SCR / 70% Champion PR	6.3	7.0	5.0	7.8	8.0	6.3	7.0
STR 4TPC	Per. Rye	100% Per. Rye	5.0	5.3	4.5	7.3	6.8	7.5	7.8
Champion Fine	Mixture	30% CF / 70% Champion	5.8	6.3	4.8	7.3	8.0	7.5	6.5
Champion GQ	Mixture	SR 4600 / Harrier / SR 4550	6.3	6.5	4.5	7.5	7.8	7.8	7.3
STR 45AB4	Per. Rye	100% Per. Rye	5.0	5.3	3.8	6.8	6.0	5.8	6.3
Champion STF	Mixture	30% SR 5250 SCR / 70% Champion PR	6.3	6.8	5.5	8.0	7.0	5.3	6.8
Acapella	Per. Rye	100% Per. Rye	6.5	7.0	4.8	6.3	7.0	5.8	6.8
STR 4QT	Per. Rye	100% Per. Rye	5.5	5.8	5.3	8.0	6.3	6.8	6.3
STR 4SLT	Per. Rye	100% Per. Rye	5.5	6.0	5.5	7.0	7.3	6.8	7.3
STR 4NV	Int. Rye	100% Int. Rye	4.8	5.3	4.3	6.5	5.8	5.5	5.3
AM-27	Per. Rye	100% Per. Rye	5.3	4.5	3.8	6.0	7.3	6.5	6.5
Pleasure +	Per. Rye	100% Per. Rye	5.3	4.5	4.8	6.3	6.5	6.5	6.5
XLT-5	Per. Rye	100% Per. Rye	5.0	5.3	4.8	6.5	6.3	6.0	6.5
Rx	Per. Rye	Blend	5.8	6.0	4.5	7.3	7.8	7.0	6.8
Par 5	Per. Rye	Blend	6.3	6.3	5.3	7.3	7.5	6.5	6.5
Jacklin Blend #1	Per. Rye	Blend	6.5	6.5	4.8	7.3	7.5	7.3	6.5
Jacklin Blend #A	Per. Rye	Blend	6.5	7.0	4.8	7.0	8.0	6.5	7.0
Panterra / 05-LmTL-Syn	Ann. Rye	Blend	3.8	4.0	5.5	5.3	4.0	4.5	4.0
Bar-LmTL-Syn	Ann. Rye	100% Ann. Rye	3.8	4.3	5.3	5.8	4.5	4.8	4.5
Peak / Panterra	Mixture	Per. / Ann. Mixture	4.5	4.8	5.5	5.5	5.0	4.3	4.5
B-6.0766	Per. Rye	100% Per. Rye	6.5	7.0	5.0	7.0	7.5	7.0	6.8
B-6.1523	Per. Rye	100% Per. Rye	6.5	6.0	5.3	8.3	8.0	7.0	6.8
B-6.0755	Per. Rye	100% Per. Rye	5.5	5.5	4.8	7.5	7.3	6.3	6.0
B-6.0759	Per. Rye	100% Per. Rye	6.3	6.3	4.0	6.0	7.5	6.3	6.3
B-6.1095	Per. Rye	100% Per. Rye	6.0	7.0	4.8	7.3	7.8	6.8	6.0
B-6.1091	Per. Rye	100% Per. Rye	7.3	7.3	5.3	6.8	8.3	7.0	6.5
B-6.0756	Per. Rye	100% Per. Rye	6.3	6.5	5.0	7.8	8.0	7.3	6.5
Pavillion	Per. Rye	100% Per. Rye	6.5	6.3	5.0	8.0	7.3	6.5	6.0
Americus	Per. Rye	100% Per. Rye	6.0	6.3	4.3	6.8	7.8	7.0	7.0
Ringer II	Per. Rye	100% Per. Rye	5.8	6.0	5.0	7.5	7.0	7.3	6.5
Sprint turf type	Ann. Rye	100% Ann. Rye	4.3	3.3	5.5	5.5	4.8	5.0	3.8
League Master	Per. Rye	1/3 Ringer - 1/3 Brea - 1/3 Heat	5.0	5.5	4.5	6.8	7.5	7.0	6.5
Heat	Per. Rye	100% Per. Rye	6.8	6.3	4.3	7.0	8.0	6.8	7.3
Brea	Per. Rye	100% Per. Rye	6.3	6.0	4.8	7.8	7.3	7.0	6.8
O-6.0438	Poa triv.	100% PT	4.0	6.5	5.5	8.3	7.0	4.0	4.8
O-6.0350	Poa triv.	100% PT	3.5	6.0	6.8	8.0	7.3	3.8	5.0
Laser	Poa triv.	100% PT	4.5	7.3	7.8	7.8	7.3	3.8	4.5
RB 3-99	Poa triv.	100% PT	4.0	7.5	7.0	8.0	6.8	3.8	6.0
PM 102	Per. Rye	100% Per. Rye	6.3	7.5	4.3	6.8	7.0	6.0	6.5
Pick EJ	Per. Rye	100% Per. Rye	5.8	5.8	4.8	6.3	7.8	7.0	7.0
Fiesta 4	Per. Rye	100% Per. Rye	6.5	7.3	5.3	7.5	7.3	6.3	6.3
Blastoff	Per. Rye	Blend Unknown	6.3	6.0	5.3	7.3	7.3	6.5	6.3
Standard entry	Per. Rye	100% Per. Rye	6.5	5.5	4.3	6.8	6.8	5.8	6.5
Gulf	Ann. Rye	100% Ann. Rye	3.3	3.3	3.3	4.3	3.3	3.8	4.0
Non-seeded Control	---	---	2.0	1.8	1.0	2.0	2.0	3.3	6.0
Test Mean			5.4	5.8	4.9	6.8	6.7	6.0	6.1
LSD			1.1	1.4	1.1	1.2	1.1	1.2	1.4