

# Evaluation of Ryegrass Cultivars for Overseeding in the Coachella Valley

Matteo Serena, Luiz Monticelli, and Jim Baird

Department of Botany and Plant Sciences

University of California, Riverside

575-932-9645; [matteos@ucr.edu](mailto:matteos@ucr.edu)

951-333-9052; [jbaird@ucr.edu](mailto:jbaird@ucr.edu)



**Objectives:**

Limited availability and rising costs of ryegrass seed prompted this research to determine establishment and quality characteristics of cultivars for the Coachella Valley and Southwest.

**Materials and Methods:**

The study was conducted on the 18<sup>th</sup> fairway of the Mountain View Golf Course at Desert Willow Golf Resort in Palm Desert, California. Prior to overseeding, bermudagrass '328' was verticut and mowed at 0.350 inches. Strobe (azoxystrobin), TNex (trinexapac-ethyl), and wetting agent were applied at 1 lb/A, 40 oz/A, and 32 oz/A, respectively. Sixty-five entries were evaluated in this study (Table 1). Experimental design was a randomized block with 3 replications. Plots (5 ft x 5 ft) were seeded by hand on November 10, 2021. Seeding rate was 870 lbs/A. Germination was first noted on November 18 and the first mowing was employed on November 22 at 0.750 inches. First frost occurred on December 11. Mowing height was lowered to 0.700 inches on December 16 prior to opening day on December 26. From seeding until February 2022, turf received ca. 3 lbs N/1,000 ft<sup>2</sup> from calcium nitrate, manganese nitrate, and 10-0-0. Other products applied periodically included Extreme Green, TNex, and wetting agent. Final mowing height was 0.500 inches.

**Results:**

Entries varied in terms of rate of establishment (Table 2). In general, annual types germinated faster than perennial types but the perennial ryegrass 'Stellar 4GL' exhibited 90% cover 12 days after seeding. Likewise, there were broad differences among entries in terms of genetic color (Table 2). Perennial types, most notably Dark Matter, were among the darker green entries whereas the annual types were lighter green in color. Turf quality data are presented in Table 3. Leaf texture and mowing quality data are presented in Table 4. Several entries maintained exceptional overall quality traits throughout the study. Cultivars were ranked from 1 (= best) to 65 for each individual rating and then rankings were totaled to determine best overall cultivars (lowest total) based on all rating criteria (Table 5). Overall, the top 5 cultivars were perennial ryegrasses: 1) Silver Sport; 2) Black Pearl; 3) Dark Matter; 4) Greenland PGR; and 5) Stellar 4GL. Highest rankings among non-perennial types included: 52) Quickston (Westerwold); 54) Breakout II (Italian); 55) Thunder ARG (Annual); 57) Candidame (Westerwold); and 59) TransAM (Intermediate). A final rating will taken in April or May 2022 to determine how these cultivars transition to bermudagrass in response to a Sapphire (penoxsulam) herbicide program.

**Acknowledgments:**

Special thanks to Chris Bien, Golf Course Superintendent, Desert Willow Golf Resort, and Regional Agronomist, Kemper Sports, for hosting this research. Thanks to the Hi-Lo GCSA, California Turfgrass & Landscape Foundation (CTLF), Mountain View Seeds, Landmark Seed, Columbia River Seeds, Pure Seed Testing, Novel AG, Inc., DLF Pickseed, Semillas Fito, Ledebor Seed, Columbia Seeds, Marion Ag Service Inc., and Carlton Seed for financial support of this research.

Table 1. Ryegrass entries in the overseeding trial at Desert Willow Golf Resort. Palm Desert, CA. 2021-2022.

Entry	Name	Species	Producer	Entry	Name	Species	Producer
1	SR 4650	Perennial Ryegrass	Standard Entry	34	Fiesta Cinco	Perennial Ryegrass	DLF Pickseed
2	Breakout II	Italian Ryegrass	Mountain View Seeds	35	SR 4700	Perennial Ryegrass	DLF Pickseed
3	PPG-PR-522	Perennial Ryegrass	Landmark Seed	36	Thrive	Perennial Ryegrass	DLF Pickseed
4	PPG-PR-472	Perennial Ryegrass	Mountain View Seeds	37	Sideways	Perennial Ryegrass	DLF Pickseed
5	PPG-PR-551	Perennial Ryegrass	Mountain View Seeds	38	Gator Fore	Perennial Ryegrass	DLF Pickseed
6	Stellar 4GL	Perennial Ryegrass	Mountain View Seeds	39	Helios	Perennial Ryegrass	DLF Pickseed
7	Black Pearl	Perennial Ryegrass	Mountain View Seeds	40	Tetradark	Perennial Ryegrass	DLF Pickseed
8	NAI-21-PR5	Perennial Ryegrass	Columbia River Seeds	41	Mightier	Perennial Ryegrass	DLF Pickseed
9	NAI-21-FFR	Perennial Ryegrass	Novel AG, Inc.	42	Hancock	Perennial Ryegrass	DLF Pickseed
10	NAI-21-GU5	Perennial Ryegrass	Novel AG, Inc.	43	Zoom 2	Perennial Ryegrass	DLF Pickseed
11	NAI-21-ALS5	Perennial Ryegrass	Novel AG, Inc.	44	Tetrasport	Perennial Ryegrass	DLF Pickseed
12	NAI-20-PS4	Perennial Ryegrass	Novel AG, Inc.	45	Allstar Fore	Perennial Ryegrass	DLF Pickseed
13	NAI-21-514	Perennial Ryegrass	Novel AG, Inc.	46	Banfield	Perennial Ryegrass	DLF Pickseed
14	PST-2E6	Perennial Ryegrass	Pure Seed Testing	47	Greenland PGR	Perennial Ryegrass	Semillas Fito
15	PST-2GDS	Perennial Ryegrass	Pure Seed Testing	48	Thunder ARG	Annual Ryegrass	Semillas Fito
16	PST-2HAF20	Perennial Ryegrass	Pure Seed Testing	49	Mensa II	Perennial Ryegrass	Ledeboer Seed
17	PST-2MEG	Perennial Ryegrass	Pure Seed Testing	50	Reatta II	Perennial Ryegrass	Ledeboer Seed
18	PST-2BGL	Perennial Ryegrass	Pure Seed Testing	51	Covet II	Perennial Ryegrass	Ledeboer Seed
19	PST-2DRG	Perennial Ryegrass	Pure Seed Testing	52	LPB-SD-104	Perennial Ryegrass	Ledeboer Seed
20	PST-2EGY	Perennial Ryegrass	Pure Seed Testing	53	LPB-SD-105	Perennial Ryegrass	Ledeboer Seed
21	PST-2FOXY	Perennial Ryegrass	Pure Seed Testing	54	Quickston	Westerwold Ryegrass	DLF Pickseed
22	PST-2HFM	Perennial Ryegrass	Pure Seed Testing	55	Candidame	Westerwold Ryegrass	DLF Pickseed
23	PST-2MAY	Perennial Ryegrass	Pure Seed Testing	56	TransAm	Intermediate Ryegrass	DLF Pickseed
24	PST-2MES1	Perennial Ryegrass	Pure Seed Testing	57	Remdy	Intermediate Ryegrass	DLF Pickseed
25	New Sealand	Perennial Ryegrass	Pure Seed Testing	58	Transaction	Intermediate Ryegrass	DLF Pickseed
26	Silver Dollar	Perennial Ryegrass	Pure Seed Testing	59	Expedite	Perennial Ryegrass	Landmark Seed
27	Silver Sport	Perennial Ryegrass	Pure Seed Testing	60	Spark	Perennial Ryegrass	Landmark Seed
28	Silver Sun	Perennial Ryegrass	Pure Seed Testing	61	Red Hawk	Perennial Ryegrass	Landmark Seed
29	Prominent	Perennial Ryegrass	Columbia River Seeds	62	Dark Matter	Perennial Ryegrass	Marion Ag Service Inc.
30	Process	Perennial Ryegrass	Columbia River Seeds	63	Alpha Centauri	Perennial Ryegrass	Marion Ag Service Inc.
31	Outlaw	Intermediate Ryegrass	Columbia River Seeds	64	Quasar	Perennial Ryegrass	Marion Ag Service Inc.
32	Pillar II	Perennial Ryegrass	Columbia River Seeds	65	BF-2	Perennial Ryegrass	Carlton Seed
33	Principal II	Perennial Ryegrass	Columbia River Seeds				

Table 2. Establishment as visual percentage of ryegrass cover (0 to 100%) on November 22, 2021 (12 days after seeding) and visual color (1 = yellow; 9 = dark green) evaluated on January 12, 2022. Desert Willow Golf Resort. Palm Desert, CA. Ryegrasses were overseeded on November 10, 2021.

Entry	Name	Establishment	Color	Entry	Name	Establishment	Color
1	SR 4650	60 ABCDE*	7.0 ABCD	34	Fiesta Cinco	77 ABC	7.0 ABCD
2	Breakout II	80 ABC	4.3 EFG	35	SR 4700	67 ABCD	6.7 ABCD
3	PPG-PR-522	63 ABCDE	6.3 BCDE	36	Thrive	53 ABCDE	7.0 ABCD
4	PPG-PR-472	63 ABCDE	7.3 ABCD	37	Sideways	63 ABCDE	7.7 ABC
5	PPG-PR-551	27 DE	8.3 AB	38	Gator Fore	50 ABCDE	7.7 ABC
6	Stellar 4GL	90 A	7.7 ABC	39	Helios	67 ABCD	6.3 BCDE
7	Black Pearl	73 ABCD	8.3 AB	40	Tetradark	27 DE	6.7 ABCD
8	NAI-21-PR5	33 CDE	7.0 ABCD	41	Mightier	77 ABC	7.7 ABC
9	NAI-21-FFR	63 ABCDE	7.7 ABC	42	Hancock	77 ABC	7.7 ABC
10	NAI-21-GU5	63 ABCDE	6.7 ABCD	43	Zoom 2	57 ABCDE	7.3 ABCD
11	NAI-21-ALS5	73 ABCD	6.3 BCDE	44	Tetrasport	50 ABCDE	6.0 CDEF
12	NAI-20-PS4	67 ABCD	6.0 CDEF	45	Allstar Fore	63 ABCDE	7.7 ABC
13	NAI-21-514	63 ABCDE	8.3 AB	46	Banfield	70 ABCD	7.7 ABC
14	PST-2E6	70 ABCD	7.7 ABC	47	Greenland PGR	80 ABC	7.7 ABC
15	PST-2GDS	50 ABCDE	8.0 ABC	48	Thunder ARG	87 AB	3.7 G
16	PST-2HAF20	60 ABCDE	7.7 ABC	49	Mensa II	60 ABCDE	8.0 ABC
17	PST-2MEG	60 ABCDE	8.3 AB	50	Reatta II	50 ABCDE	6.7 ABCD
18	PST-2BGL	47 ABCDE	7.3 ABCD	51	Covet II	50 ABCDE	7.0 ABCD
19	PST-2DRG	63 ABCDE	8.3 AB	52	LPB-SD-104	40 BCDE	7.0 ABCD
20	PST-2EGY	57 ABCDE	7.3 ABCD	53	LPB-SD-105	17 E	7.7 ABC
21	PST-2FOXY	43 ABCDE	7.3 ABCD	54	Quickston	77 ABC	4.0 FG
22	PST-2HFM	60 ABCDE	7.7 ABC	55	Candidame	90 A	3.7 G
23	PST-2MAY	43 ABCDE	7.7 ABC	56	TransAm	87 AB	4.0 FG
24	PST-2MES1	67 ABCD	7.0 ABCD	57	Remdy	57 ABCDE	4.3 EFG
25	New Sealand	73 ABCD	7.7 ABC	58	Transaction	70 ABCD	5.3 DEFG
26	Silver Dollar	77 ABC	8.3 AB	59	Expedite	63 ABCDE	7.0 ABCD
27	Silver Sport	67 ABCD	8.3 AB	60	Spark	43 ABCDE	8.3 AB
28	Silver Sun	57 ABCDE	7.7 ABC	61	Red Hawk	67 ABCD	7.0 ABCD
29	Prominent	53 ABCDE	7.3 ABCD	62	Dark Matter	83 AB	8.7 A
30	Process	63 ABCDE	7.7 ABC	63	Alpha Centauri	43 ABCDE	7.7 ABC
31	Outlaw	77 ABC	3.7 G	64	Quasar	17 E	6.7 ABCD
32	Pillar II	57 ABCDE	8.0 ABC	65	BF-2	67 ABCD	8.3 AB
33	Principal II	70 ABCD	7.3 ABCD				

\*Means followed by the same letter in the same column are not statistically different ( $P < 0.05$ ).

Table 3. Turfgrass quality (1-9; 9 = best) on December 15, 2021 (35 days after seeding) and on February 2, 2022 (115 days after seeding). Desert Willow Golf Resort. Palm Desert, CA. Ryegrasses were overseeded on November 10, 2021.

Entry	Name	12/15/2021	2/2/2022	Entry	Name	12/15/2021	2/2/2022
1	SR 4650	8.0 ABC*	7.3 ABCD	34	Fiesta Cinco	8.3 ABC	7.3 ABCD
2	Breakout II	6.3 BCD	6.0 CDEF	35	SR 4700	7.3 ABCD	8.0 AB
3	PPG-PR-522	8.3 ABC	7.3 ABCD	36	Thrive	7.3 ABCD	8.0 AB
4	PPG-PR-472	7.3 ABCD	7.3 ABCD	37	Sideways	7.3 ABCD	7.3 ABCD
5	PPG-PR-551	8.7 AB	8.7 A	38	Gator Fore	8.0 ABC	8.0 AB
6	Stellar 4GL	8.0 ABC	7.7 ABC	39	Helios	7.7 ABC	7.3 ABCD
7	Black Pearl	8.3 ABC	8.3 AB	40	Tetradark	6.0 CD	8.7 A
8	NAI-21-PR5	7.0 ABCD	8.0 AB	41	Mightier	7.7 ABC	8.0 AB
9	NAI-21-FFR	7.7 ABC	7.0 ABCDE	42	Hancock	8.3 ABC	8.3 AB
10	NAI-21-GU5	8.0 ABC	7.3 ABCD	43	Zoom 2	7.7 ABC	8.3 AB
11	NAI-21-ALS5	8.0 ABC	6.7 BCDEF	44	Tetrasport	6.3 BCD	7.0 ABCDE
12	NAI-20-PS4	8.3 ABC	7.0 ABCDE	45	Allstar Fore	8.3 ABC	7.7 ABC
13	NAI-21-514	8.7 AB	8.3 AB	46	Banfield	8.0 ABC	7.7 ABC
14	PST-2E6	8.0 ABC	8.3 AB	47	Greenland PGR	8.7 AB	8.0 AB
15	PST-2GDS	8.3 ABC	8.0 AB	48	Thunder ARG	6.0 CD	6.0 CDEF
16	PST-2HAF20	7.0 ABCD	8.3 AB	49	Mensa II	8.3 ABC	7.7 ABC
17	PST-2MEG	7.3 ABCD	8.3 AB	50	Reatta II	8.0 ABC	7.7 ABC
18	PST-2BGL	8.0 ABC	8.0 AB	51	Covet II	7.3 ABCD	8.0 AB
19	PST-2DRG	8.3 ABC	8.3 AB	52	LPB-SD-104	6.3 BCD	7.7 ABC
20	PST-2EGY	7.7 ABC	7.7 ABC	53	LPB-SD-105	8.0 ABC	8.3 AB
21	PST-2FOXY	8.3 ABC	8.3 AB	54	Quickston	6.0 CD	5.7 DEF
22	PST-2HFM	8.0 ABC	8.0 AB	55	Candidame	6.0 CD	5.3 EF
23	PST-2MAY	7.3 ABCD	8.0 AB	56	TransAm	6.0 CD	5.7 DEF
24	PST-2MES1	9.0 A	8.0 AB	57	Remdy	7.0 ABCD	6.0 CDEF
25	New Sealand	7.7 ABC	7.3 ABCD	58	Transaction	6.7 ABCD	6.0 DEF
26	Silver Dollar	8.3 ABC	8.0 AB	59	Expedite	7.7 ABC	8.0 AB
27	Silver Sport	8.3 ABC	8.0 AB	60	Spark	6.3 BCD	8.0 AB
28	Silver Sun	8.7 AB	8.0 AB	61	Red Hawk	8.3 ABC	8.0 AB
29	Prominent	7.3 ABCD	8.0 AB	62	Dark Matter	8.0 ABC	8.7 A
30	Process	8.3 ABC	7.7 ABC	63	Alpha Centauri	7.7 ABC	8.0 AB
31	Outlaw	5.0 D	5.0 F	64	Quasar	6.7 ABCD	7.7 ABC
32	Pillar II	8.0 ABC	7.7 ABC	65	BF-2	7.3 ABCD	8.3 AB
33	Principal II	8.3 ABC	7.7 ABC				

\*Means followed by the same letter in the same column are not statistically different ( $P < 0.05$ ).

Table 4. Visual leaf texture (1-9; 1 = coarse; 9 = fine) evaluated on December 15, 2021, and mowing quality (1-9; 9 = best) evaluated on February 2, 2022. Desert Willow Golf Resort. Palm Desert, CA. Ryegrasses were overseeded on November 10, 2021.

Entry	Name	Texture	Mowing	Entry	Name	Texture	Mowing
1	SR 4650	8.3 A*	6.3	34	Fiesta Cinco	8.3 A	7.0
2	Breakout II	6.3 ABCDE	6.3	35	SR 4700	8.0 AB	7.7
3	PPG-PR-522	8.3 A	7.3	36	Thrive	7.7 ABC	7.0
4	PPG-PR-472	8.0 AB	7.7	37	Sideways	8.3 A	5.3
5	PPG-PR-551	8.0 AB	7.0	38	Gator Fore	8.3 A	6.7
6	Stellar 4GL	8.0 AB	6.7	39	Helios	7.7 ABC	7.3
7	Black Pearl	8.3 A	7.7	40	Tetradark	6.3 ABCDE	7.3
8	NAI-21-PR5	6.7 ABCDE	6.3	41	Mightier	7.3 ABCD	6.0
9	NAI-21-FFR	8.0 AB	7.0	42	Hancock	8.0 AB	5.3
10	NAI-21-GU5	8.3 A	7.7	43	Zoom 2	7.7 ABC	8.0
11	NAI-21-ALS5	7.7 ABC	6.7	44	Tetrasport	6.7 ABCDE	7.3
12	NAI-20-PS4	7.3 ABCD	6.7	45	Allstar Fore	8.3 A	5.3
13	NAI-21-514	8.3 A	7.0	46	Banfield	8.0 AB	6.7
14	PST-2E6	7.7 ABC	7.7	47	Greenland PGR	8.7 A	6.7
15	PST-2GDS	8.3 A	7.3	48	Thunder ARG	5.3 CDEF	6.3
16	PST-2HAF20	7.3 ABCD	7.7	49	Mensa II	8.0 AB	6.3
17	PST-2MEG	8.7 A	6.0	50	Reatta II	7.7 ABC	7.0
18	PST-2BGL	8.3 A	6.7	51	Covet II	7.7 ABC	6.0
19	PST-2DRG	8.0 AB	6.7	52	LPB-SD-104	8.0 AB	7.0
20	PST-2EGY	8.0 AB	6.7	53	LPB-SD-105	8.7 A	7.0
21	PST-2FOXY	8.3 A	6.7	54	Quickston	5.0 DEF	6.7
22	PST-2HFM	8.0 AB	8.0	55	Candidame	3.7 FG	6.0
23	PST-2MAY	7.7 ABC	7.3	56	TransAm	3.3 FG	6.3
24	PST-2MES1	7.7 ABC	8.0	57	Remdy	4.3 EFG	6.3
25	New Sealand	8.0 AB	6.0	58	Transaction	5.7 BCDEF	6.0
26	Silver Dollar	7.3 ABCD	7.3	59	Expedite	7.7 ABC	6.7
27	Silver Sport	8.3 A	7.7	60	Spark	8.0 AB	7.3
28	Silver Sun	8.7 A	6.7	61	Red Hawk	7.3 ABCD	8.0
29	Prominent	7.7 ABC	6.3	62	Dark Matter	8.0 AB	7.0
30	Process	8.0 AB	6.0	63	Alpha Centauri	7.7 ABC	8.0
31	Outlaw	2.3 G	5.7	64	Quasar	7.7 ABC	6.3
32	Pillar II	8.3 A	6.3	65	BF-2	7.7 ABC	5.7
33	Principal II	8.0 AB	7.0				

\*Means followed by the same letter in the same column are not statistically different ( $P < 0.05$ ).

Table 5. Overall ranking of ryegrass cultivars (1 = best to 65) based on establishment, turfgrass quality, color, texture, and mowing quality. Desert Willow Golf Resort. Palm Desert, CA. Ryegrasses were overseeded on November 10, 2021.

Entry	Name	Ranking	Entry	Name	Ranking
1	SR 4650	39	34	Fiesta Cinco	8
2	Breakout II	54	35	SR 4700	17
3	PPG-PR-522	22	36	Thrive	44
4	PPG-PR-472	21	37	Sideways	32
5	PPG-PR-551	36	38	Gator Fore	19
6	Stellar 4GL	5	39	Helios	46
7	Black Pearl	2	40	Tetradark	58
8	NAI-21-PR5	62	41	Mightier	26
9	NAI-21-FFR	35	42	Hancock	20
10	NAI-21-GU5	11	43	Zoom 2	23
11	NAI-21-ALS5	42	44	TetraSport	56
12	NAI-20-PS4	53	45	Allstar Fore	27
13	NAI-21-514	7	46	Banfield	9
14	PST-2E6	13	47	Greenland PGR	4
15	PST-2GDS	16	48	Thunder ARG	55
16	PST-2HAF20	33	49	Mensa II	34
17	PST-2MEG	28	50	Reatta II	51
18	PST-2BGL	48	51	Covet II	60
19	PST-2DRG	6	52	LPB-SD-104	50
20	PST-2EGY	43	53	LPB-SD-105	40
21	PST-2FOXY	38	54	Quickston	52
22	PST-2HFM	14	55	Candidame	57
23	PST-2MAY	45	56	TransAm	59
24	PST-2MES1	15	57	Remyd	65
25	New Sealand	31	58	Transaction	61
26	Silver Dollar	12	59	Expedite	47
27	Silver Sport	1	60	Spark	30
28	Silver Sun	18	61	Red Hawk	25
29	Prominent	49	62	Dark Matter	3
30	Process	37	63	Alpha Centauri	41
31	Outlaw	63	64	Quasar	64
32	Pillar II	29	65	BF-2	24
33	Principal II	10			