An Evaluation of Grasses Under Low-Input, Reduced Maintenance Conditions, for Potential Turfgrass Use in California

Victor A. Gibeault, Emeritus, Botany and Plant Sciences Department; Stephen T. Cockerham, Superintendent, UC Riverside Agricultural Operations; Steven B. Ries, Staff Research Associate, Agricultural Operations; and Richard Autio, retired, Botany and Plant Sciences Department.

A low maintenance turfgrass study was established on May 28-29, 2003, at the University of California, Riverside, Turfgrass Research Facility. It was the objective of the study to evaluate the relative turfgrass performance of grasses under low water- and low nutritional inputs. The 24 grasses included traditional low maintenance warm- and cool-season turfgrasses; experimental traditional turfgrasses; and warm and cool-season plains states native grasses. The 24 grasses examined are listed on the attached study plot plan.

The grasses were allowed to "grow-in" during 2003. Deficit irrigation (irrigation below water needed for optimum performance) for warm-season turfgrasses was initiated in 2004 and continued through the end of 2006. The irrigation level was approximately 50% of the California Irrigation Management Information System (CIMIS) reference evapotranspiration (ETo). Fertilization was restricted to fall applications that normally totaled 1.0 pound of N per 1000 sq.ft per year. The plots were mowed weekly at a three inch height until September, 2005, when the plots were split to a high cut (3.0") and low cut (1.25").

On December 31, 2006, the formal study concluded, but the low maintenance regimes of the study were continued to the present time. Because of drought and high temperature conditions in 2007/2008 additional separation of relative grass performance was noted. Grass cover and turfgrass quality ratings were made October, 2007, and again in June, 2008. A 1-10 rating scale was used, with 10 representing best cover or quality. Tables 1-4, attached, are of a preliminary nature, for information only at this 2008 UC Riverside Turfgrass Field Day, and are not intended for further publication at this time.

The grasses that should be noted for higher performance results under low input maintenance practices and presented in Tables 1-4 include: Buffalograsss (all cultivars and experimental grasses), *Zoysia tenuifolia*, Saltgrasses (A 138, DT 18), Sporobolis (DT12), Blue Grama (Hatchita), and Bermudagrass (Princess). Other grasses gave various lower levels of performance and some of the grasses could not survive the severe maintenance regime for the duration of the study.

Table 1. Grass Quality (range 1-10 with 10 being best) for the "whole study". Average of High and Low cut; high mowing height; and low mowing height. October, 2007.

Note: Preliminary (Not for reproduction)

Grass	Whole Study (Average of High & Low)	High Mowing Height	Low Mowing Height
Hybrid Texas bluegrass (HB342)	2.000 CDEF	2.333 BCDEF	1.667 CD
Zoysia tenuifolia	3.667 AB	3.667 AB	3.667 AB
Hard Fescue	1.000 F	1.000 F	1.000 D
Canada bluegrass	1.000 F	1.000 F	1.000 D
Seashore Paspalum	1.333 DEF	1.333 EF	1.333 CD
Crested hairgrass (Barkoel)	1.667 CDEF	1.333 EF	2.000 CD
Russian wildrye (Bozoisky)	1.500 DEF	1.667 DEF	1.333 CD
Blue grama (Alma)	1.000 F	1.000 F	1.000 D
Blue grama (Hatchita)	2.833 BC	3.333 ABC	2.333 BCD
Buffalograss (SWI 2000)	1.667 CDEF	1.667 DEF	1.667 CD
Sideoats grama	1.500 DEF	1.667 DEF	1.333 CD
Bermudagrass (Sahara)	2.167 DEF	2.000 CDEF	2.333 BCD
Bermudagrass (Princess)	2.500 CD	2.667 BCDE	2.333 BCD
Saltgrass (A 137)	1.167 EF	1.333 EF	1.000 D
Saltgrass (A 138)	1.833 CDEF	2.000 CDEF	1.667 CD
Buffalograss (UC Verde)	4.833 A	4.667 A	5.000 A
Buffalograss (Legacy)	2.333 CDE	2.333 BCDEF	2.333 BCD
Buffalograss (Cody)	1.500 DEF	1.333 EF	1.667 CD
Zoysiagrass (De Anza)	1.000 F	1.000 F	1.000 D
Zoysiagrass (Zenith)	1.333 DEF	1.333 EF	1.333 CD
Spike Muhly	1.667 CDEF	1.667 DEF	1.667 CD
Saltgrass (DT18)	2.000 CDEF	1.667 DEF	2.333 BCD
Sporobolis (DT12)	2.833 BC	3.000 BCD	2.667 BC
Saltgrass (DT16)	1.833 CDEF	2.333 BCDEF	1.333 CD

Note: Data followed by the same letter(s) not significantly different.

Table 2. Grass Cover (range 1-10 with 10 best) for the "whole study" which is Average of High and Low cut; high mowing height; and low mowing height. October, 2007.

Note: Preliminary (Not for reproduction)

Grass	Whole Study (Average of High & Low)	High Mowing Height	Low Mowing Height
Hybrid Texas bluegrass (HB342)	3.667 CDEFG	4.333 BCDEF	3.000 CDE
Zoysia tenuifolia	6.667 AB	6.667 AB	6.667 AB
Hard Fescue	2.000 DEFG	2.333 EFG	1.667 DE
Canada bluegrass	1.833 EFG	2.000 EFG	1.667 DE
Seashore Paspalum	2.167 DEFG	2.000 EFG	2.333 CDE
Crested hairgrass (Barkoel)	2.667 DEFG	2.667 DEFG	2.667 CDE
Russian wildrye (Bozoisky)	2.333 DEFG	3.000 CDEFG	1.667 DE
Blue grama (Alma)	1.500 G	2.000 EFG	1.000 E
Blue grama (Hatchita)	5.500 BC	6.000 ABC	5.000 BC
Buffalograss (SWI 2000)	3.167 CDEFG	2.333 EFG	4.000 BCDE
Sideoats grama	2.667 DEFG	3.000 CDEFG	2.333 CDE
Bermudagrass (Sahara)	4.167 BCDEF	4.333 BCDEF	4.000 BCDE
Bermudagrass (Princess)	4.333 BCDE	5.667 ABCD	3.000 CDE
Saltgrass (A 137)	2.167 DEFG	2.667 DEFG	1.667 DE
Saltgrass (A 138)	2.833 CDEFG	3.333 CDEFG	2.333 CDE
Buffalograss (UC Verde)	8.833 A	8.667 A	9.000 A
Buffalograss (Legacy)	4.167 BCDEF	4.667 BCDEF	3.667 BCDE
Buffalograss (Cody)	2.833 CDEFG	2.667 DEFG	3.000 CDE
Zoysiagrass (De Anza)	1.000 G	1.000 G	1.000 E
Zoysiagrass (Zenith)	1.667 EFG	1.667 FG	1.667 DE
Spike Muhly	2.667 DEFG	3.333 CDEFG	2.333 CDE
Saltgrass (DT18)	3.000 CDEFG	2.667 DEFG	3.333 CDE
Sporobolis (DT12)	4.667 BCD	5.000 BCDE	4.333 BCD
Saltgrass (DT16)	3.000 CDEFG	3.333 CDEFG	2.667 CDE

Note: Data followed by the same letter(s) not significantly different.

Table 3. Grass Quality (range 1-10 with 10 best) for the "whole study" which is Average of High and Low cut; high mowing height; high mowing height and low mowing height. June, 2008.

Note: Preliminary (Not for reproduction)

Grass	Whole Study (Average of High & Low)	High Mowing Height	Low Mowing Height
Hybrid Texas bluegrass (HB342)	2.000 DEFGH	2.333 CDEF	1.667 CDE
Zoysia tenuifolia	4.500 AB	4.667 AB	4.333 AB
Hard Fescue	1.833 EFGH	2.333 CDEF	1.333D
Canada bluegrass	1.600 FGH	1.000 F	2.000 CDE
Seashore Paspalum	1.500 FGH	1.000 F	1.667 CDE
Crested hairgrass (Barkoel)	2.667 CDEF	2.000 DEF	3.333 ABCD
Russian wildrye (Bozoisky)	2.333 CDEFGH	2.333 CDEF	2.333 BCDE
Blue grama (Alma)	1.500 FGH	2.000 DEF	1.000 E
Blue grama (Hatchita)	3.333 BCD	3.667 ABC	3.000 ABCDE
Buffalograss (SWI 2000)	3.333 BCD	3.333 BCD	3.333 ABCD
Sideoats grama	2.833 CDEF	3.000 CD	2.667 BCDE
Bermudagrass (Sahara)	2.333 CDEFGH	2.333 CDEF	2.333 BCDE
Bermudagrass (Princess)	3.167 BCDE	3.667 ABC	2.667 BCDE
Saltgrass (A 137)	2.333 CDEFGH	2.333 CDEF	2.333 BCDE
Saltgrass (A 138)	3.167 BCDE	3.333 BCD	3.000 ABCDE
Buffalograss (UC Verde)	5.000 A	5.000 A	5.000 A
Buffalograss (Legacy)	3.667 ABC	3.667 ABC	3.667 ABC
Buffalograss (Cody)	3.167 BCDE	3.667 ABC	2.667 BCDE
Zoysiagrass (De Anza)	1.333 GH	1.000 F	1.000 E
Zoysiagrass (Zenith)	1.000 H	1.333 EF	1.333 DE
Spike Muhly	2.000 DEFGH	2.333 CDEF	1.667 CDE
Saltgrass (DT18)	2.833 CDEF	2.667 CDE	3.000 ABCDE
Sporobolis (DT12)	3.333 BCD	3.333 BCD	3.333 ABCD
Saltgrass (DT16)	2.500 CDEFG	3.000 BC	2.000 CDE

Note: Data followed by the same letter(s) not significantly different.

Table 4. Grass Cover (range 1-10 with 10 best) for the "whole study" which is Average of High and Low cut; high mowing height; and low mowing height. June, 2008.

Note: Preliminary (Not for reproduction)

Grass	Whole Study (Average of High & Low)	High Mowing Height	Low Mowing Height
Hybrid Texas bluegrass (HB342)	3.167 EFG	3.333 FGHIJ	3.000 CDEF
Zoysia tenuifolia	6.000 ABCDE	8.000 ABC	4.000 BCDEF
Hard Fescue	2.833 FG	4.000 EFGHIJ	1.667 EF
Canada bluegrass	2.600 FG	1.000 J	3.667 CDEF
Seashore Paspalum	1.500 FG	1.000 J	1.667 EF
Crested hairgrass (Barkoel)	4.333 CDEF	2.667 HIJ	6.000 ABC
Russian wildrye (Bozoisky)	3.167 EFG	3.667 EFGHIJ	2.667 CDEF
Blue grama (Alma)	2.000 FG	3.000 GHIJ	1.000 F
Blue grama (Hatchita)	6.000 ABCDE	6.333 ABCDEF	5.667 ABCD
Buffalograss (SWI 2000)	7.000 ABC	6.333 ABCDEF	7.667 AB
Sideoats grama	5.833 BCDE	6.000 ABCDEFG	5.667 ABCD
Bermudagrass (Sahara)	3.833 DEFG	5.000 CDEFGHI	2.667 CDEF
Bermudagrass (Princess)	6.833 ABC	8.333 AB	5.333 ABCDE
Saltgrass (A 137)	3.667 DEFG	4.000 EFGHIJ	3.333 CDEF
Saltgrass (A 138)	6.167 ABCD	6.667 ABCDE	5.667 ABCD
Buffalograss (UC Verde)	8.833 A	9.000 A	8.667 A
Buffalograss (Legacy)	8.000 AB	8.000 ABC	8.000 A
Buffalograss (Cody)	6.333 ABCD	7.333 ABCD	5.333 ABCDE
Zoysiagrass (De Anza)	1.000 G	1.000 J	1.000 F
Zoysiagrass (Zenith)	2.000 FG	2.000 IJ	2.000 DEF
Spike Muhly	3.833 DEFG	4.667 DEFGHI	3.000 CDEF
Saltgrass (DT18)	6.000 ABCDE	5.667 BCDEFG	6.333 ABC
Sporobolis (DT12)	6.833 ABC	8.000 ABC	5.667 ABCD
Saltgrass (DT16)	4.167 CDEF	5.000 CDEFGHI	3.333 CDEF

Note: Data followed by the same letter(s) not significantly different.