

## STOP #7: Drought Tolerant Turfgrasses for Southern California

Jim Baird and Adam Lukaszewski

### Overview

Choosing or developing a species/cultivar with improved tolerance to drought/heat/salinity stress is an important approach toward sustainability of turfgrasses in the California landscape amidst declining water resources and increasing water use restrictions on lawns and landscapes. UC Riverside is taking several approaches to meet these challenges. Current research includes:

1. National Turfgrass Evaluation Program (NTEP) tests for tall fescue, perennial ryegrass, zoysiagrass, bermudagrass, and warm-season putting green turf (bermudagrass, zoysiagrass, seashore Paspalum).
2. Test comparing cultural management and traffic tolerance among seeded and vegetative buffalograss cultivars.
3. Turfgrass Water Conservation Alliance (TWCA) drought test on perennial ryegrass, Kentucky bluegrass, and tall fescue cultivars.
4. Evaluation of Kurapia (*Lippia nodiflora*) as a low-growing groundcover for improved stress tolerance.
5. Thanks to a new grant from the Metropolitan Water District of Southern California and the CTLF, we are positioned to hire a turfgrass breeder to accelerate our turfgrass improvement program for California climates. Broad objectives include:
  - a. Developing cool-season grasses that stay greener longer with less water in the dry summer months. Focus will be on the fescues, ryegrass, and their hybrids.
  - b. Developing warm-season grasses that retain their color during winter dormancy. Focus will be on bermudagrass and kikuyugrass.
  - c. Improvement of kikuyugrass as a turfgrass species in California. Focus will be on winter color, shade tolerance, disease tolerance, and more desirable growth characteristics.
6. Evaluation of lawn and native grasses under deficit irrigation.
  - a. Entries (following pages) were seeded on 10 May 2013.
  - b. 4.0 lbs N/M and non-limiting irrigation during establishment.
  - c. Plots mowed weekly at 2 and 4 inches since July.
  - d. On August 15 (one month before Field Day) irrigation was turned off. Plots were then watered by hand 3X weekly to replace 50% CIMIS ETo.
  - e. Plots rated weekly for drought stress (1-9 scale, 9 = best) and digital image analysis


### UCR Lawn/Native Grass Deficit Irrigation Study


No.	Product/Species/Variety	Company	Seeding Rate lbs/1000 ft <sup>2</sup>
1	Delta Native Bentgrass ➤ <i>Agrostis pallens</i>	Delta Bluegrass Company	1.5
2	Delta Native Mow Free Mix ➤ <i>Festuca rubra</i> Molate 40% - Red Fescue ➤ <i>Festuca occidentalis</i> 30% - Western Fescue ➤ <i>Festuca idahoensis</i> 30% - Idaho Fescue	Delta Bluegrass Company	3.0
3	Delta Native Biofiltration Mix ➤ <i>Stipa pulchra</i> - Purple Needlegrass ➤ <i>Festuca rubra</i> Molate - Red Fescue ➤ <i>Hordeum californicum</i> - California barley ➤ <i>Hordeum brachyantherum</i> - Meadow barley	Delta Bluegrass Company	3.0
4	Delta Bolero Plus Mix 90/10	Delta Bluegrass Company	5.0
5	Delta 90/10 Fescue/Blue Mix	Delta Bluegrass Company	5.0
6	MVS Tall Fescue ➤ Spyder LS	Mountain View Seeds	5.0
7	MVS Tall Fescue ➤ PPG-TF105	Mountain View Seeds	5.0
8	MVS Tall Fescue ➤ Titanium LS	Mountain View Seeds	5.0
9	MVS Tall Fescue ➤ PPG-TF142	Mountain View Seeds	3.0
10	MVS Tall Fescue ➤ PPG-TF156	Mountain View Seeds	3.0
11	MVS Tall Fescue ➤ PPG-TF145	Mountain View Seeds	3.0
12	Stover Native All- Purpose Mix ➤ <i>Bromus carinatus</i> 20% ➤ <i>Nassella (Stipa) pulchra</i> 31% ➤ <i>Festuca rubra</i> Molate 31% ➤ <i>Deschampsia cespitosa</i> var <i>Holciformis</i> 8% ➤ <i>Agrostis pallens (Diegosensis)</i> 6% ➤ <i>Koeleria macrantha</i> 4%	STOVER Seed Company	1.12
13	Stover Native Fine Fescue Mix ➤ <i>Festuca rubra</i> Molate 37% ➤ <i>Festuca occidentalis</i> 37% ➤ <i>Koeleria macrantha</i> 11% ➤ <i>Deschampsia cespitosa</i> var <i>Holciformis</i> 15%	STOVER Seed Company	0.62
14	Stover Native Bentgrass ➤ <i>Agrostis pallens (Diegosensis)</i> Siskiyou thingrass	STOVER Seed Company	0.69

No.	Product/Species/Variety	Company	Seeding Rate lbs/1000 ft <sup>2</sup>
15	Cutting Edge Sun & Shade Mix ➤ Tall Fescue 19.8% ➤ Chewings Fescue 19.8% ➤ Hard Fescue 19.7% ➤ Kentucky Bluegrass 19.4% ➤ Perennial Ryegrass 19.4%	Cutting Edge	5.0
16	Pearl's Premium Ultra Low Maintenance Lawn Seed - Sunny Mix ➤ 'Dakota' Tall Fescue 19.75% ➤ 'Frontier' P. Rye 19.75% ➤ 'Deepblue' Kentucky Bluegrass 19.65% ➤ 'Harpoon' Hard Fescue 19.65% ➤ 'Carmen' Chewings Fescue 19.65%	Pearl's Premium	5.0
17	New Millenia Dwarf Fescue Blend ➤ '2 <sup>nd</sup> Millenium' Tall Fescue ➤ 'Focus' Tall Fescue ➤ 'Avenger' Tall Fescue	STOVER Seed Company	5.0

17		6		4		14		16	
8		7		5		2		12	
4		7		12		6		7	
6		14		11		12		5	
1		11		3		15		17	
16		16		10		13		10	
9		13		8		3		1	
3		2		1		10		15	
14		15		5		9		8	
2		4		9		11		13	

North →

 4-inch mowing height

 2-inch mowing height