

Weed Management and Transition Techniques for Converting Tall Fescue to Buffalograss for Water Conservation

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With drought and decreasing water availability becoming more of an issue in Southern California, home lawns are going to be more difficult to keep green year around using cool season turfgrasses like tall fescue. With the replacement of cool-season to warm-season turf, homeowners could reduce their landscape water use drastically. However, when converting home lawns, one must eradicate the existing lawn. This is usually done by sod removal or nonselective chemical control, and can be quite unsightly until the new turf establishes. Homeowners could choose to replace their lawn with sod, but this can be very expensive. So, many end up seeding or plugging if those options are available. This leaves bare areas of ground that, when well watered, establish weeds just as much as turf. With advancements in herbicide technology, there is greater potential for a smoother transition to warm season turf to reduce the unsightly appearance of dead, brown turf. The purpose of this study was to look into better methods of transitioning tall fescue to buffalograss by either seed or plugs using new and old herbicide chemistry.

Location:	UCR Turf Facility
Soil:	Hanford fine sandy loam
Experimental Design:	Randomized complete block with 3 replications
Plot Size:	7 ft by 7ft
Species/Cultivars:	Mature stand of 'West Coaster' tall Fescue; 'UC Verde' buffalograss (plugs) and a blend of three experimental varieties from the University of Nebraska: NE BFG07-03, NE BFG 07-01, and NE BFG 07-4E
Fertility:	4.0 lb N/1000 ft ² /year
Mowing Height:	2 inches
Plugs and Seed Established:	4 August 2010

Plug Spacing: 15 inches

Seeding Rate: 2 lbs/1000 ft²

Irrigation Regimes: Established for 8 weeks at 160% ET_o replacement then irrigation was lowered to warm season (ET_o*K_c)/DU

Application Information: CO₂ Bicycle sprayer
TeeJet 8002DG nozzles
19" nozzle spacing
22" boom height
Speed 2 mph
Output: 30GPA
Pressure: 42 psi @ tank

Application of Roundup QuikPro: 27 July 2010 at 1.5 oz product per gallon in a backpack sprayer

Application Timing: A: 27 July 2010
B: 2 September 2010
C: 11 May 2011
D: 15 July 2011

Data Collection: Turf quality by species, percent weed cover by species, and percent turf cover by species

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Results:

- ✓ This study was initiated in August 2010, which is late for establishment of warm-season turfgrasses like buffalograss. Nevertheless, we found that UC Verde established more rapidly from plugs than the NE seeded blend. By November 4, the final rating date in 2010, and May 5, the first rating in 2011, maximum buffalograss cover was achieved when the tall fescue was first treated with Roundup QuikPro followed by Speedzone Southern, Imprelis, or the sulfonylurea herbicides (Table 1).
- ✓ The best control of tall fescue was achieved by initial application of Roundup QuikPro followed by repeat applications of sulfonylurea herbicides (Table 2).
- ✓ Without a nonselective herbicide application, Celsius treatments were the most effective toward eradication of tall fescue and increasing buffalograss cover. Although not as effective without Roundup QuikPro, discoloration of tall fescue was more gradual with Celsius which may be more visually acceptable to homeowners, clients, etc. during transition.
- ✓ In 2011, broadleaf weed pressure mounted and some tall fescue lingered, thus two additional applications of the selective herbicides were made from each treatment. Weed populations shifted throughout the year. Herbicide efficacy data are presented in Tables 3-5.

Treatments:

Trt	Est. Method	Herbicide(s)	Rate(s)	Timing
1.	Seed	Roundup QuikPro (Control)	1.5 oz/gal	A
2.	Plugs	Roundup QuikPro (Control)	1.5 oz/gal	A
3.	Seed	Roundup QuikPro Imprelis	1.5 oz/gal 1.5 oz/A	A BCD
4.	Plugs	Roundup QuikPro Imprelis	1.5 oz/gal 1.5 oz/A	A BCD
5.	Seed	Roundup QuikPro Imprelis	1.5 oz/gal 3.0 oz/A	A BCD
6.	Plugs	Roundup QuikPro Imprelis	1.5 oz/gal 3.0 oz/A	A BCD
7.	Seed	Roundup QuikPro Imprelis	1.5 oz/gal 4.5 oz/A	A BCD
8.	Plugs	Roundup QuikPro Imprelis	1.5 oz/gal 4.5 oz/A	A BCD
9.	Seed	Roundup QuikPro Speedzone Southern	1.5 oz/gal 4.0 pt/A	A BCD
10.	Plugs	Roundup QuikPro Speedzone Southern	1.5 oz/gal 4.0 pt/A	A BCD
11.	Seed	RoundupQuikPro Celsius Revolver	1.5 oz/gal 2.45 oz/A 4.5 oz/A	A BCD BCD
12.	Plugs	RoundupQuikPro Celsius Revolver	1.5 oz/gal 2.45 oz/A 4.5 oz/A	A BCD BCD
13.	Seed	Roundup QuikPro Tenacity Monument Tenacity Monument	1.5 oz/gal 5 oz/A 10 g/A 8 oz/A 15 g/A	A B B CD CD
14.	Plugs	Roundup QuikPro Tenacity Monument Tenacity Monument	1.5 oz/gal 5 oz/A 10 g/A 8 oz/A 15 g/A	A B B CD CD
15.	Seed	Roundup QuikPro Tenacity Monument Monument	1.5 oz/gal 5 oz/A 10 g/A 15 g/A	A A B CD
16.	Plugs	Roundup QuikPro Tenacity Monument Monument	1.5 oz/gal 5 oz/A 10 g/A 15 g/A	A A B CD

17.	Seed	Celsius Celsius	2.5 oz/A 4.0 oz/A	A BCD
18.	Plugs	Celsius Celsius	2.5 oz/A 4.0 oz/A	A BCD
19.	Seed	Tenacity Tenacity Monument Tenacity Monument	5.0 oz/A 5.0 oz/A 10.0 g/A 8 oz/A 15 g/A	A B B CD CD
20.	Plugs	Tenacity Tenacity Monument Tenacity Monument	5.0 oz/A 5.0 oz/A 10g/A 8 oz/A 15 g/A	A B B CD CD
21.	Seed	Celsius Revolver	4.9 oz/A 9.0 oz/A	ACD ACD
22.	Plugs	Celsius Revolver	4.9 oz/A 9.0 oz/A	ACD ACD
23.	Seed	Tenacity Monument	5.0 oz/A 15.0 g/A	A BCD
24.	Plugs	Tenacity Monument	5.0 oz/A 15.0 g/A	A BCD

Plot Map:

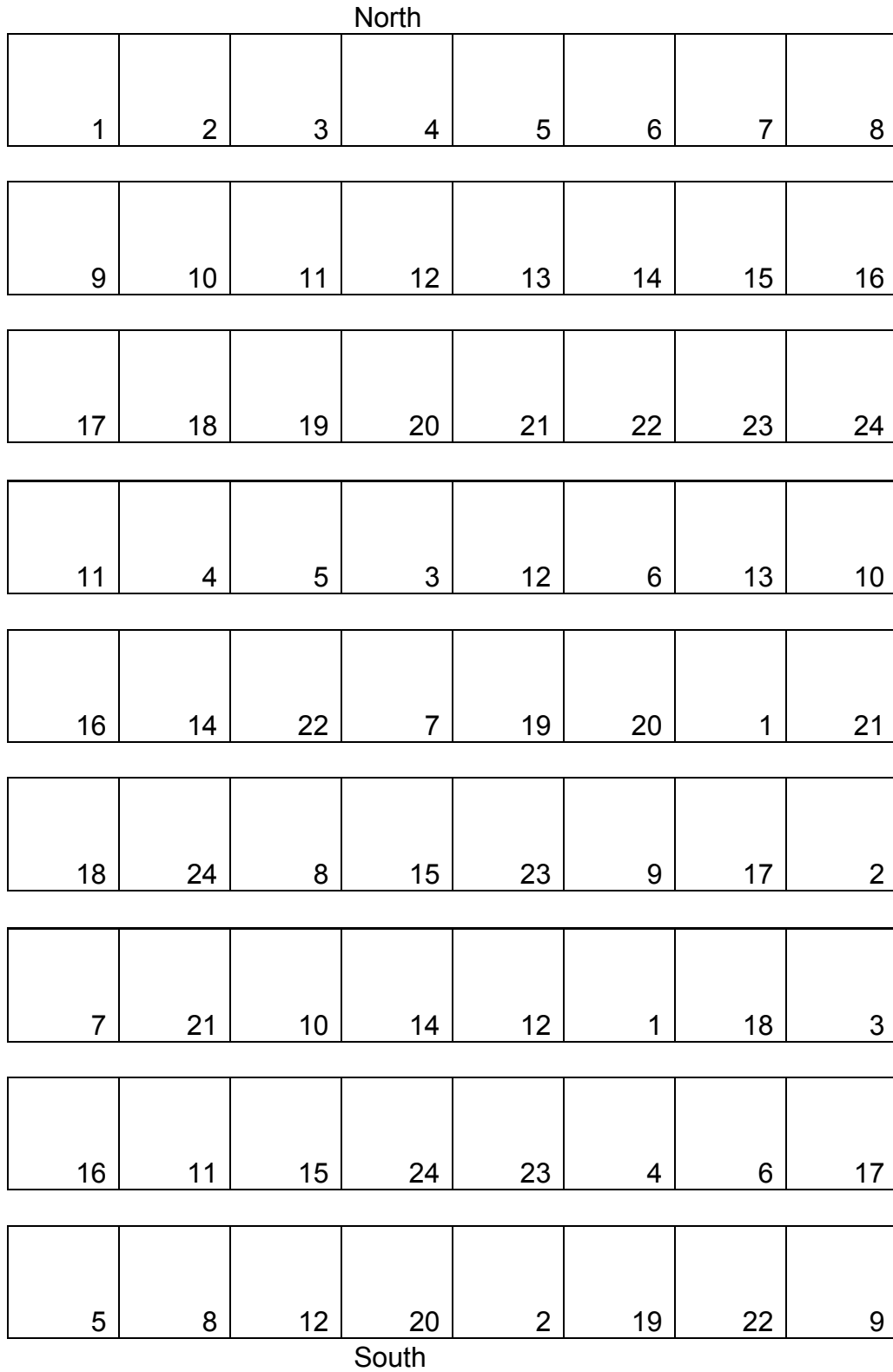


Table 1. Buffalograss cover (0-100%) following application of selective herbicides in 2010 and 2011. Riverside, CA.

Trt	Product	Rate	11/4/10	5/10/11	7/7/11	8/3/11	9/7/11
1	Control	--	10.7 f-i	58.3 ab	56.7 bcd	56.7 b-g	55.0 efg
2	Control	--	23.3 bc	60.0 ab	73.3 ab	81.7 ab	81.7 a-d
3	Imprelis	1.5 oz/A	13.3 efg	50.0 abc	71.7 ab	78.3 a-d	68.3 b-f
4	Imprelis	1.5 oz/A	18.3 cde	58.3 ab	75.0 ab	80.7 abc	80.0 a-d
5	Imprelis	3.0 oz/A	9.7 ghi	51.7 ab	70.0 ab	71.7 af	71.7 a-e
6	Imprelis	3.0 oz/A	23.3 bc	61.7 ab	81.7 ab	85.0 ab	81.7 a-d
7	Imprelis	4.5 oz/A	5.7 i-l	45.0 a-d	76.7 ab	81.7 ab	83.3 abc
8	Imprelis	4.5 oz/A	25.0 b	65.0 a	71.7 ab	85.7 a	85.0 abc
9	Speedzone Southern	4.0 pt/A	12.3 e-h	63.3 ab	56.7 bcd	86.7 a	83.3 abc
10	Speedzone Southern	4.0 pt/A	33.3 a	63.3 ab	83.3 a	58.3 a-g	90.0 a
11	Celsius Revolver	2.45 oz/A 4.5 oz/A	3.0 jkl	18.3 d-g	73.3 ab	80.0 abc	85.0 abc
12	Celsius Revolver	2.45 oz/A 4.5 oz/A	20.0 bcd	66.7 a	80.0 ab	85.0 ab	88.3 ab
13	Tenacity Monument	8 oz/A 15 g/A	5.7 i-l	21.7 c-g	61.7 abc	66.7 a-f	73.3 a-e
14	Tenacity Monument	8 oz/A 15 g/A	16.7 def	51.7 ab	66.7 ab	76.7 a-e	85.0 abc
15	Monument	15 g/A	3.0 jkl	15.0 efg	40.0 cde	35.0 ghi	50.0 fg
16	Monument	15 g/A	9.0 g-j	41.7 a-e	75.0 ab	80.0 abc	81.7 a-d
17	Celsius	4.0 oz/A	3.0 jkl	8.3 fg	30.0 ef	45.0 fgh	53.3 efg
18	Celsius	4.0 oz/A	13.3 efg	35.0 b-f	66.7 ab	52.3 c-g	83.3 abc
19	Tenacity Monument	8 oz/A 15 g/A	1.3 kl	3.0 g	8.3 f	14.0 i	23.3 hi
20	Tenacity Monument	8 oz/A 15 g/A	7.3 g-k	4.7 g	7.3 f	12.3 i	20.0 i
21	Celsius Revolver	4.9 oz/A 9 oz/A	7.0 h-l	13.3 efg	35.0 de	50.0 d-g	61.7 d-g
22	Celsius Revolver	4.9 oz/A 9 oz/A	7.3 g-k	4.0 g	8.0 f	20.0 hi	43.3 gh
23	Monument	15 g/A	1.0 l	3.3 g	5.3 f	7.3 i	14.3 i
24	Monument	15 g/A	12.3 e-h	20.0 d-g	30.0 ef	48.3 e-h	66.7 c-f
	LSD ($\alpha = 0.05$)	--	6.29	28.35	26.32	28.98	20.82

Table 2. Tall fescue cover (0-100%) following application of selective herbicides in 2010 and 2011. Riverside, CA.

Trt	Product	Rate	11/4/10	5/10/11	7/7/11	8/3/11	9/7/11
1	Control	--	1.0 f	5.0 g	5.0 efg	3.9 fgh	9.7 c-g
2	Control	--	0.7 f	4.3 g	3.7 fg	1.9 gh	5.0 e-h
3	Imprelis	1.5 oz/A	3.3 f	11.7 fg	14.3 a-d	15.0 c-f	18.3 abc
4	Imprelis	1.5 oz/A	4.0 f	15.7 fg	12.3 a-e	12.3 c-g	15.0 a-d
5	Imprelis	3.0 oz/A	8.3 def	14.3 fg	14.0 a-d	17.3 b-e	21.7 ab
6	Imprelis	3.0 oz/A	4.7 f	10.0 fg	9.0 c-f	10.7 d-h	13.3 b-e
7	Imprelis	4.5 oz/A	1.7 f	9.0 fg	6.7 c-g	6.7 e-h	7.3 d-h
8	Imprelis	4.5 oz/A	6.7 ef	12.3 fg	10.0 b-f	9.3 d-h	10.7 c-f
9	Speedzone Southern	4.0 pt/A	2.3 f	4.0 g	3.7 fg	5.0 fgh	6.3 d-h
10	Speedzone Southern	4.0 pt/A	4.0 f	6.7 g	3.3 fg	2.7 gh	5.7 d-h
11	Celsius Revolver	2.45 oz/A 4.5 oz/A	0.0 f	1.7 g	0.0 g	0.0 h	0.0 h
12	Celsius Revolver	2.45 oz/A 4.5 oz/A	0.0 f	0.0 g	0.0 g	0.0 h	0.0 h
13	Tenacity Monument	8 oz/A 15 g/A	0.0 f	0.7 g	0.0 g	0.0 h	0.0 h
14	Tenacity Monument	8 oz/A 15 g/A	0.0 f	2.3 g	0.0 g	0.0 h	0.0 h
15	Monument	15 g/A	0.0 f	1.0 g	0.0 g	0.0 h	0.3 gh
16	Monument	15 g/A	0.0 f	1.7 g	0.0 g	0.0 h	0.0 h
17	Celsius	4.0 oz/A	7.3 ef	30.0 ef	20.0 a	20.0 bcd	23.3 a
18	Celsius	4.0 oz/A	5.0 f	18.3 fg	13.3 a-e	9.4 d-h	10.7 c-f
19	Tenacity Monument	8 oz/A 15 g/A	41.7 b	65.0 bc	12.3 a-e	28.3 ab	11.7 c-f
20	Tenacity Monument	8 oz/A 15 g/A	46.7 b	80.0 ab	20.0 a	40.0 a	15.0 a-d
21	Celsius Revolver	4.9 oz/A 9 oz/A	36.7 bc	61.7 bcd	15.0 abc	20.0 bcd	9.0 c-h
22	Celsius Revolver	4.9 oz/A 9 oz/A	70.0 a	88.3 a	18.3 ab	23.3 bc	9.7 c-g
23	Monument	15 g/A	21.7 cde	50.0 cde	9.0 c-f	11.7 c-h	5.0 e-h
24	Monument	15 g/A	23.3 cd	41.7 de	6.3 d-g	11.7 c-h	2.7 fgh
	LSD ($\alpha = 0.05$)	--	15.93	21.96	8.56	11.92	9.63

Table 3. Mare's Tail (*Conyza canadensis*) cover (0-100%) following application of herbicides on 11 May and 15 July 2011. Riverside, CA.

Trt	Product	Rate	5/10/11	5/25/11	6/9/11	6/27/11	7/7/11	7/21/11	8/3/11	9/7/11
1	Control	--	4.3 b-g	10.7 ab	13 a	14 a	14 a	16.7 a	14.0 a	15.7 a
2	Control	--	4.7 b-g	11.7 a	12.3 a	11.7 a	10 b	14.0 a	10.7ab	5.0 b
3	Imprelis	1.5 oz/A	3 c-g	7.3 a-e	5.7bcd	1.3 d-g	1 efg	0.3 fg	0.0 e	0.0 d
4	Imprelis	1.5 oz/A	4.7 b-g	4.3 d-g	4.3 b-f	2 d-g	0.7 fg	0.3 fg	0.0 e	0.0 d
5	Imprelis	3.0 oz/A	3.7 b-g	3.7 d-g	2 d-g	0 g	0 g	0.0 g	0.0 e	0.0 d
6	Imprelis	3.0 oz/A	2.7 d-g	3.7 d-g	2 d-g	0.7 fg	0 g	0.0 g	0.0 e	0.0 d
7	Imprelis	4.5 oz/A	6.7 a-d	6.3 b-f	3.3 c-g	1 efg	0.7 fg	0.0 g	0.0 e	0.0 d
8	Imprelis	4.5 oz/A	2.7 d-g	2.3 fg	1.3 fg	0 g	0 g	0.0 g	0.0 e	0.0 d
9	Speedzone Southern	4.0 pt/A	5 b-f	6 b-f	5.3 b-e	3.3 cde	3.3 c-g	3.0 d-g	0.7 e	1.0 cd
10	Speedzone Southern	4.0 pt/A	5.3 b-f	5.7 c-g	3 c-g	2 d-g	1.7 d-g	1.7 efg	0.3 e	0.3 d
11	Celsius Revolver	2.45 oz/A 4.5 oz/A	10.3 a	11.3 a	8 b	5.7 bc	6 c	8.0 b	5.7 cd	1.7 cd
12	Celsius Revolver	2.45 oz/A 4.5 oz/A	4.3 b-g	3 efg	5.7 bcd	2 d-g	2.7 c-g	2.3 efg	0.3 e	0.3 d
13	Tenacity Monument	8 oz/A 15 g/A	7 abc	8 a-d	4.7 b-f	6 b	6 c	7.3 b	3.3 de	1.0 cd
14	Tenacity Monument	8 oz/A 15 g/A	4 b-g	6.3 b-f	5 b-f	2.3 d-g	2.3 c-g	5.0 b-e	0.7 e	0.0 d
15	Monument	15 g/A	3.3 n-g	5.7 c-g	3 c-g	3.7 bcd	6 c	7.0 bc	11.7 a	3.0 bcd
16	Monument	15 g/A	6.3 a-e	6 b-f	6 bc	3.7 bcd	5 cd	6.3 bcd	5.0 cd	4.0 bc
17	Celsius	4.0 oz/A	6.3 a-e	9.3 abc	4.7 b-f	2.7 def	4.7 cde	3.7 c-f	1.0 e	0.3 d
18	Celsius	4.0 oz/A	7.3 ab	8 a-d	7.3 b	2 d-g	2.3 c-g	2.7 efg	0.3 e	0.0 d
19	Tenacity Monument	8 oz/A 15 g/A	2.7 d-g	3 efg	1.7 efg	1.3 d-g	2 d-g	2.3 efg	1.3 e	1.0 cd
20	Tenacity Monument	8 oz/A 15 g/A	1.3 fg	1 g	0.3 g	1 efg	0.3 fg	0.7 fg	0.0 e	0.0 d
21	Celsius Revolver	4.9 oz/A 9 oz/A	2.7 d-g	2 fg	1.7 efg	0.3 fg	0.3 fg	0.0 g	0.0 e	0.0 d
22	Celsius Revolver	4.9 oz/A 9 oz/A	0.7 g	1 g	0 g	0 g	0 g	0.3 fg	0.0 e	0.0 d
23	Monument	15 g/A	2.3 efg	2.7 efg	1.7 efg	1.3 d-g	2 d-g	2.0 efg	6.7 cd	2.7 bcd
24	Monument	15 g/A	2.3 efg	2.7 efg	2.3 c-g	2 d-g	4 c-f	3.7 c-f	7.3 bc	4.0 bc
	LSD ($\alpha = 0.05$)	--	4.08	4.86	3.83	2.56	3.76	3.51	3.47	3.02

Table 4. Brass Buttons cover (0-100%) following application of herbicides on 11 May and 15 July 2011. Riverside, CA.

Trt	Product	Rate	5/10/11	5/25/11	6/9/11	6/27/11	7/7/11	7/21/11	8/3/11	9/7/11
1	Control	--	4.7 ab	4.0 abc	3.0 a	3.7 a	0.7 a	0.3	0.0	0.0
2	Control	--	4.7 ab	3.7 bcd	3.0 a	0.7 b	0.0 c	0.0	0.0	0.0
3	Imprelis	1.5 oz/A	1.7 bcd	1.7 b-e	1.0 b	0.0 b	0.0 c	0.0	0.0	0.0
4	Imprelis	1.5 oz/A	4.0 abc	4.3 ab	1.0 b	0.0 b	0.0 c	0.0	0.0	0.0
5	Imprelis	3.0 oz/A	3.0 a-d	2.0 b-e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
6	Imprelis	3.0 oz/A	4.7 ab	4.0 abc	0.7 bc	0.0 b	0.0 c	0.0	0.0	0.0
7	Imprelis	4.5 oz/A	1.3 bcd	1.3 b-e	0.3 bc	0.0 b	0.0 c	0.0	0.0	0.0
8	Imprelis	4.5 oz/A	6.3 a	7.3 a	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
9	Speedzone Southern	4.0 pt/A	4.0 abc	2.0 b-e	0.3 bc	0.3 b	0.3 b	0.0	0.0	0.0
10	Speedzone Southern	4.0 pt/A	6.3 a	2.7 b-e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
11	Celsius Revolver	2.45 oz/A 4.5 oz/A	2.7 a-d	1.7 b-e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
12	Celsius Revolver	2.45 oz/A 4.5 oz/A	3.7 a-d	2.3 b-e	0.3 bc	0.0 b	0.0 c	0.0	0.0	0.0
13	Tenacity Monument	8 oz/A 15 g/A	3.0 a-d	1.0 b-e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
14	Tenacity Monument	8 oz/A 15 g/A	0.7 cd	0.0 e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
15	Monument	15 g/A	2.7 a-d	0.3 de	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
16	Monument	15 g/A	2.7 a-d	1.0 b-e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
17	Celsius	4.0 oz/A	1.7 bcd	0.3 de	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
18	Celsius	4.0 oz/A	0.7 cd	0.7 cde	0.0 c	0.0 b	0.0 c	0.0	2.0	0.0
19	Tenacity Monument	8 oz/A 15 g/A	0.7 cd	0.0 e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
20	Tenacity Monument	8 oz/A 15 g/A	0.0 d	0.0 e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
21	Celsius Revolver	4.9 oz/A 9 oz/A	1.7 bcd	1.0 b-e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
22	Celsius Revolver	4.9 oz/A 9 oz/A	0.0 d	0.0 e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
23	Monument	15 g/A	1.3 bcd	0.0 e	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
24	Monument	15 g/A	2.3 bcd	0.3 de	0.0 c	0.0 b	0.0 c	0.0	0.0	0.0
	LSD ($\alpha = 0.05$)	--	3.86	3.41	0.99	1.06	0.27	NS	NS	NS

Table 5. Purple Cudweed cover (0-100%) following application of herbicides on 11 May and 15 July 2011. Riverside, CA.

Trt	Product	Rate	5/10/11	7/7/11	7/21/11	8/3/11	9/7/11
1	Control	--	5.7 abc	7.3 b-e	7.3 def	6.3 cde	5.7 b-e
2	Control	--	5.7 abc	5.7 c-f	8.0 c-f	5.0 cde	6.3 b-e
3	Imprelis	1.5 oz/A	0.7 de	0.7 ef	0.0 f	0.0 e	0.0 e
4	Imprelis	1.5 oz/A	0.0 e	0.0 f	0.0 f	0.0 e	0.0 e
5	Imprelis	3.0 oz/A	0.7 de	0.0 f	0.0 f	0.0 e	0.0 e
6	Imprelis	3.0 oz/A	0.0 e	0.0 f	0.0 f	0.0 e	0.0 e
7	Imprelis	4.5 oz/A	5.0 a-d	0.7 ef	0.0 f	0.0 e	0.0 e
8	Imprelis	4.5 oz/A	2.0 cde	0.3 f	2.7 def	0.0 e	0.0 e
9	Speedzone Southern	4.0 pt/A	7.7 ab	5.3 c-f	7.3 def	4.0 cde	2.7 cde
10	Speedzone Southern	4.0 pt/A	7.3 ab	5.7 c-f	6.0 def	3.0 cde	1.7 de
11	Celsius Revolver	2.45 oz/A 4.5 oz/A	0.0 e	7.3 b-e	6.7 def	6.7 b-e	6.7 b-e
12	Celsius Revolver	2.45 oz/A 4.5 oz/A	8.0 a	10.0 bc	12.3 bcd	9.0 b-e	9.7 bc
13	Tenacity Monument	8 oz/A 15 g/A	7.3 ab	8.7 bcd	11.7 b-e	13.3 bc	12.3 b
14	Tenacity Monument	8 oz/A 15 g/A	3.3 b-e	13.3 b	19.0 b	19.0 b	12.3 b
15	Monument	15 g/A	8.3 a	25.0 a	31.7 a	33.3 a	30.0 a
16	Monument	15 g/A	3.3 b-e	9.7 bc	18.3 bc	12.7 bcd	11.7 b
17	Celsius	4.0 oz/A	5.0 a-d	4.3 c-f	6.7 def	6.3 cde	7.3 b-e
18	Celsius	4.0 oz/A	1.7 cde	1.7 ef	2.3 def	1.7 cde	0.0 e
19	Tenacity Monument	8 oz/A 15 g/A	1.3 cde	2.7 def	3.3 def	5.7 cde	6.3 b-e
20	Tenacity Monument	8 oz/A 15 g/A	1.0 de	0.7 ef	1.7 ef	2.3 cde	6.7 b-e
21	Celsius Revolver	4.9 oz/A 9 oz/A	2.7 cde	1.0 ef	1.7 ef	0.7 de	1.3 de
22	Celsius Revolver	4.9 oz/A 9 oz/A	0.0 e	0.0 f	0.0 f	0.7 de	1.3 de
23	Monument	15 g/A	1.7 cde	2.3 def	4.3 def	5.0 cde	7.3 b-e
24	Monument	15 g/A	1.7 cde	3.7 c-f	5.3 def	5.3 cde	7.7 bcd
	LSD ($\alpha = 0.05$)	--	4.56	6.79	10.33	12.60	7.53