Final Report

Title: **Selective Control of Persistent Perennial Ryegrass from Bermudagrass Turf**

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Objectives: Evaluate existing and experimental herbicides for removal of perennial ryegrass that persists in bermudagrass turf, and during the summer when conditions are less than favorable for ryegrass control

Location: UCR Turfgrass Research Facility, Riverside

Soil: Hanford fine sandy loam (coarse-loamy, mixed, superactive, nonacid, thermic Typic Xerorthent)

Experimental Design: Randomized complete block; three replications

Plot Size: 6 ft x 8 ft

Species/Cultivars: Bermudagrass (*Cynodon dactylon* (L.) Pers.) 'Princess' overseeded with perennial ryegrass (43% SR4600, 28% SR4220, 25% SR4330) on 10/19/07

Mowing Height: 3/4 inches

Application Information: CO_2 Bicycle Sprayer
TeeJet 8002 DG Nozzles
19" Nozzle Spacing
21" Boom Height
Speed: 2 mph
Output: 30 GPA
Pressure: 43 psi at tank
Calibration: 732ml/nozzle/minute

Application Dates: All treatments were applied on 7/23/09 and treatments 2, 4, 6, 8, and 9 were applied or repeated on 8/20/09; Turflon Ester (triclopyr) was applied at 16 oz/A + 0.25% v/v MSO on 9/8/09 to help reduce bermudagrass competition and allow for easier determination of ryegrass control from herbicide treatments.

Irrigation: 60%ET*Kc/DU

Data Collected: Bermudagrass phytotoxicity (1-9 scale with 1 = dead turf, 6 = minimally acceptable turf, and 9 = best); percent ryegrass control (0-100%).

Results:

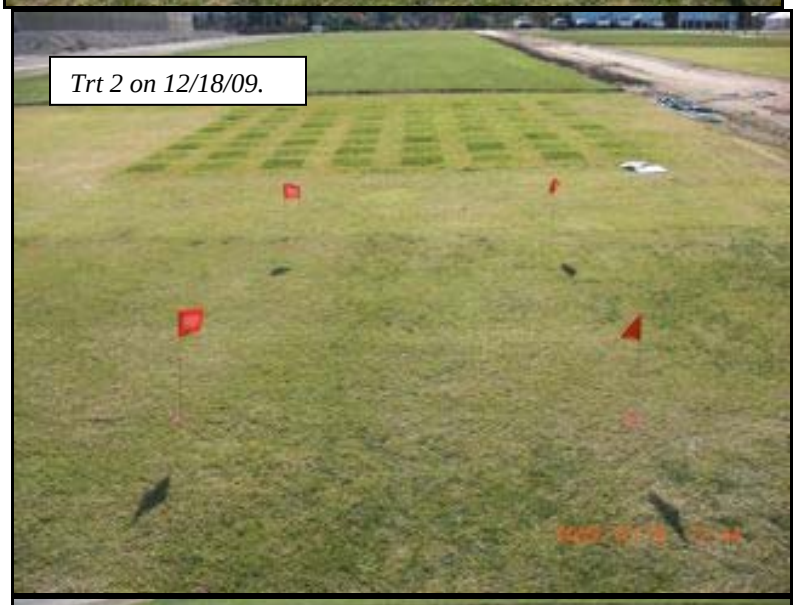
- ✓ This study represented a worse case scenario of attempting to eradicate persistent ryegrass in bermudagrass at the worst possible time of year - the summer months when bermudagrass has the competitive advantage and overshadows ryegrass. Applications were timed one and two months prior to Field Day on September 17, 2009. For greater efficacy, herbicide applications are recommended in late fall through early spring when ryegrass is actively growing.
- ✓ Bermudagrass injury was observed within 7 days of application of Revolver, Specticle, Celsius, and Monument treatments; however, injury was minimal and turf recovered within 14 days of application.
- ✓ With the exceptions of slight bermudagrass injury from treatments or following application of Turflon Ester on 9/8/09, it was difficult to completely ascertain the level of ryegrass control because of bermudagrass competition. Therefore, the most reliable estimate of ryegrass control was made on 12/18/09 when the bermudagrass was nearly dormant.
- ✓ On several of the rating dates including the final date of 12/18/09, there was variability in control across replications ranging from little or none to almost complete control for some treatments including Revolver and Celsius. However, the best and most consistent control in the study was achieved with Specticle and Monument.
- ✓ A single application of Monument at 15g product/A provided as good control of ryegrass as compared to two applications at 10g each.
- ✓ There appeared to be no added benefit of tank-mixing the sulfonylurea herbicides with Kerb for ryegrass control.

Table 1. Bermudagrass phytotoxicty (1-9, 1 = dead) and perennial ryegrass control (0-100%) following application of herbicide treatments on 7/23/09. Treatments 2, 4, 6, 8, and 9 were applied or repeated on 8/20/09. Riverside, CA.

			7/30	7/30	8/10	8/20	8/24	8/24	8/31	8/31	9/9	9/21	10/27	12/18
No.	Trt	Rate	Phyt	Cont	Cont	Cont	Phyt	Cont	Phyt	Cont	Cont	Cont	Cont	Cont
1	Revolver MSO AMS	26oz/A 0.5%v/v 3lb/A	8	10	95	96.7	9	89.3	9	90	90	75.3	60	50
2	Revolver MSO AMS	26oz/A 0.5%v/v 3lb/A	9	0	0	0	7.7	13.3	8	95	96	96	66.7	53.3
3	Specticle MSO	4.1oz/A 0.5%v/v	7.7	13.3	43.3	36.7	9	13.3	9	30	36.7	51.7	75	86.7
4	Specticle MSO	4.1oz/A 0.5%v/v	9	0	0	0	9	3.3	9	38.3	40	68.3	86.7	90
5	Celsius MSO	3.5oz/A 0.5%v/v	6	50	95	96.7	9	93.3	9	81.7	91.7	98	83.3	83.3
6	Celsius MSO	3.5oz/A 0.5%v/v	9	0	0	0	7	13.3	7.3	93.3	98	98	90	56.7
7	Monument NIS	15g/A 0.25%v/v	7	11.7	95	98.3	9	94.3	9	97	96	97	83.3	83.3
8	Monument NIS	15g/A 0.25%v/v	9	0	0	0	8	26.7	8	98.7	98	97	95	91.7
9	Monument NIS	10g/A 0.25%v/v	7	18.3	95	91.7	7.3	66	8.3	95	97	98	90	88.3
10	Kerb NIS	3lb/A 0.25%v/v	9	0	73	56.7	9	56.7	9	80	66.7	70	60	63.3
11	Kerb Revolver MSO AMS	1.5lb/A 18oz/A 0.5%v/v 3lb/A	7	15	85	63.3	9	73.3	9	53.3	50	82.7	63.3	51.7
12	Kerb Monument NIS	1.5lb/A 10g/A 0.25%v/v	7	16.7	88.3	70	9	30	9	55	70	85.3	76.7	66.7
13	Control		9	0	0	0	9	0	9	0	0	6.7	0	0
	LSD (0.05)		**0.3**	**3.6**	**8.4**	**7.8**	**0.4**	**16.8**	**0.8**	**10.7**	**10.7**	**27.8**	**21.4**	**33.8**

*Treatment mean differences in columns greater than or equal to LSD are significantly different, Fisher's Protected LSD, *P*=0.05. Revolver is foramsulfuron from Bayer. Specticle is indaziflam from Bayer. Celsius is a mixture of thiencarbazone, iodosulfuron, and dicamba from Bayer. Monument is trifloxysulfuron from Syngenta. Kerb is pronamide from Dow AgroSciences. MSO (methylated seed oil). NIS (Non-ionic surfactant).


Trt 1 on 12/18/09.


Trt 2 on 12/18/09.


Trt 3 on 12/18/09.

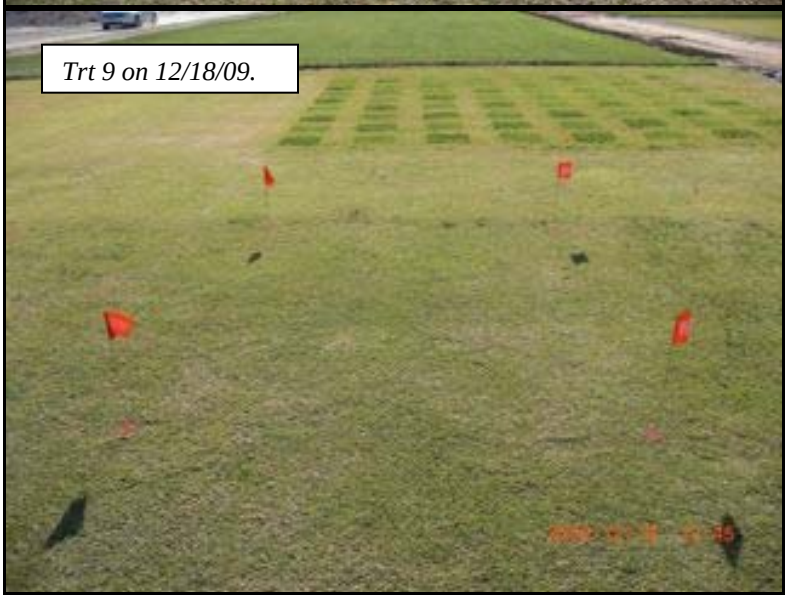
Trt 4 on 12/18/09.

Trt 5 on 12/18/09.

Trt 6 on 12/18/09.


Trt 7 on 12/18/09.

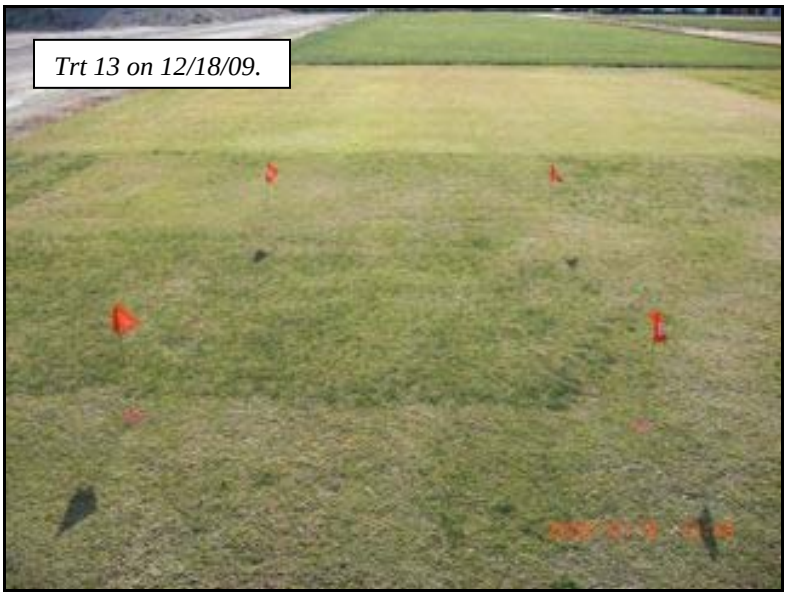

Trt 8 on 12/18/09.


Trt 9 on 12/18/09.


Trt 10 on 12/18/09.


Trt 11 on 12/18/09.


Trt 12 on 12/18/09.


Trt 13 on 12/18/09.