

RRCB Control Alternatives Screening Trial with Current Standards and Additional Candidates

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Background/Objective

It is important to demonstrate that there are herbicidal control alternatives to Roundup for the control of Roundup Ready Creeping Bentgrass. We conducted small-plot trials to confirm non-selective control of bentgrass using current standard products compared to additional new candidates.

Site Information

Location:	William H. Daniel Research and Diagnostic Center, W. Lafayette, IN.
Soil Type:	Starks-Fincastle silt loam
Soil pH:	7.2
Soil Organic Matter (%):	
Turfgrass Species:	
Turf Condition:	
Turf Management: Mowing Height cm (in):	1.25 (0.5)
Fertilization:	
Irrigation:	To prevent moisture stress
Testing on Site Previous Year:	None
Target Pest:	Creeping bentgrass
Growth Stage:	Mature

Application Information

Application Date:	15 July	15 Aug	17 Sep
Application Time:	7:30 AM	7:00 AM	7:30 AM
Air Temperature C⁰(F⁰):	22.3 (72.2)	23.3 (74)	18.1 (64.6)
Relative Humidity(%):	69	84	66
Wind Speed m s⁻¹ (mph):	Calm	1.8 (4)	Calm
Soil Temperature(7.6 cm depth) C⁰(F⁰):	21.7 (71)	21.1 (70)	16.1 (61)
Soil Moisture:	Moist	Wet	Moist
Spray Volume L ha⁻¹ (gal 1000 ft⁻²):	407 (1)		
Spray Pressure:	35psi		
Spray Nozzle:	8001		
Spray Equipment:	CO ₂ backpack		
Irrigation After Application:	None		
Experimental Design:	Randomized complete block		
Replications:	3		
Plot Size m (ft):	1.5 X 1.5 (5 X 5)		

Results

Though the data was highly variable among replications, three applications of Roundup Pro, Fusilade, Select, and Poast Plus provided 0% cover of creeping bentgrass by 5 Nov. Two applications of Roundup Pro provided 9.3% cover of bentgrass, but two applications of the Fusilade, Select, and Poast Plus provided poor control. A single application of Atrazine gave immediate burndown, but the bentgrass recuperated to 60% cover by Nov. and multiple applications may be beneficial. Assuming

Roundup resistant creeping bentgrass responds to herbicides similar to non-Roundup-resistant creeping bentgrass, 3 applications of Fusilade, Select, and Poast Plus appear to be adequate alternatives to Roundup Pro for control of Roundup-resistant creeping bentgrass.

Table 1. Percent cover of living creeping bentgrass.

Treatment	Rate of application	Application timing ^c	Aug 2	Aug 15	Sep 3	Sep 18	Oct 2	Oct 13	Oct 23	Nov 5
	lbs ai/A									
Check			96	93	70	70	73	88	90	93
Roundup Pro	1.5 ^a	0	0	0	0	3	10	15	13	23
Roundup Pro	1.5 ^a	0, 4	0	1	0	2	3	6	7	9
Roundup Pro	1.5 ^a	0, 4, 8	0	0	0	1	0	0	0	0
Fusilade DX 2L (Fusilade II) + COC	0.375 1 ^b	0	33	57	53	78	75	83	86	90
Fusilade DX 2L (Fusilade II) + COC	0.375 1 ^b	0, 4	30	25	0	4	20	30	30	35
Fusilade DX 2L (Fusilade II) + COC	0.375 1 ^b	0, 4, 8	48	30	0	2	0	0	0	0
Roundup Pro + Fusilade DX 2L (Fusilade II)	1.5 ^a 0.375	0, 4	0	1	0	1	4	6	4	8
Select 2EC (Envoy) + COC	0.25 1 ^b	0	65	82	88	85	87	91	94	96
Select 2EC (Envoy) + COC	0.25 1 ^b	0, 4	63	73	0	1	10	22	30	42
Select 2EC (Envoy) + COC	0.25 1 ^b	0, 4, 8	80	88	3	10	0	0	0	0
Poast Plus 1L (Vantage 1L) + COC	0.375 1 ^b	0	75	67	58	60	67	80	82	87
Poast Plus 1L (Vantage 1L) + COC	0.375 1 ^b	0, 4	53	57	2	6	23	31	33	38
Poast Plus 1L (Vantage 1L) + COC	0.375 1 ^b	0, 4, 8	37	50	2	4	1	2	0	0
Scepter 70DG (Image) + NISO.25 ^b	0.5	0	94	93	72	72	72	78	78	83
Scepter 70DG (Image) + MSMA 6L	0.5 2.0	0	95	96	77	65	63	79	76	79

+ NIS0.25 ^b										
Atrazine 4L	2.0	0	0	3	9	22	33	47	53	60
+ COC	1 ^c									
Lexone 75DF (Metribuzin)	0.25	0	42	65	47	52	52	63	63	66
+ MSMA 6L	2.0									
Balance 75WG	0.2	0	80	85	58	60	60	66	70	74
Balance 75WG	0.1	0, 4	85	85	37	38	47	43	72	77
TranXit 25DF	1.0 ^d	0, 4	95	95	50	43	42	48	55	60
+ NIS0.25 ^b										
MON 44951 75DF	2.0 ^d	0, 4	95	96	88	88	83	89	88	92
+ NIS0.25 ^b										
Assure II	0.0825	0	80	85	23	43	70	85	87	88
+ COC	1 ^b									
Assure II	0.048	4								
+ COC	1 ^b									
LSD (0.05)			14	20	38	38	35	38	38	35

^a Rate of application was pounds acid equivalent per acre.

^b Rate of application was percent volume per volume.

^c Rate of application was quarts per acre.

^d Rate of application was ounce product per acre.

^e Application timing is weeks after initial application with the initial application being 15 July.