

Evaluation of Experimental Broadleaf Weed Control Formulations for Control of Broadleaf Weeds in Turfgrass When Applied to Dry Foliage

Matt Klingenberg and Nick Christians

Introduction:

The purpose of this experiment was to evaluate experimental broadleaf weed control formulations for control of broadleaf weeds in Kentucky bluegrass when applied to dry foliage and watered-in immediately after application. This trial was located at the Iowa State University research station near Gilbert, Iowa.

Materials and Methods:

This trial was conducted as a randomized complete block design with 5 replications. It had 15 treatments including the control (Table 1). Application of the products took place between 1:30 and 3:00 PM on June 1, 2006 and treatments were immediately watered in with .25" of water with a hose end sprayer. All granular treatments were made with shaker box containers. The trimec classic was applied in the equivalent of 3 gallons water/1000 ft² with a CO₂ sprayer backpack sprayer.

Precounts of dandelion, common plantain, and an estimate of percentage cover of clover were made prior to the initiation of treatments. Weed damage was evaluated at 1 and 2 weeks after treatment on a scale of 0-100% 0= no injury and 100= brown and appears dead. Weed counts of the number of dandelion and plantain and the percentage of clover were made at 4, 8, and 12 weeks after treatment.

Phytotoxicity to grass was evaluated on a scale of 0-100% 0= no injury and 100= brown and appears dead before application at 1, 2, 4, 8, and 12 weeks after treatment (WAT).

Turf color was evaluated on a scale of 1-9 1= dead turf and 9= dark green turf before application and at 1, 2, 4, 8, and 12 weeks after treatment.

Results:

Amicarbazone at 0.25 and 0.448 lb ai/A were the only treatments to significantly reduce the turf quality of the Kentucky bluegrass. This damage continued through the 12 WAT.

KJM-44 at the 0.134 lb ai/A rate slightly damaged the bluegrass at 2 and 8 WAT, but the damage was minor and it recovered by 12 WAT.

The most effective materials at controlling dandelions were mesotrione and KJM-44. These two materials were effective through 8 WAT. By 12 WAT, KJM-44 at 0.134 lb ai/A was the only treatment still showing significant reductions in dandelion numbers (Table 4).

There was no significant reduction in common plantain at any time following treatment. Numerically, trimec appeared to provide the best control of plantain at 12 WAT.

Clover percentages were quite variable during the study and at 12 WAT, the control had only 6 % cover. The two materials that appeared to provide the best clover control over the 12 weeks of the study were mesotrione at the higher rate and KJM-44 at both rates.

Plots treated with metsulfuron methyl at 0.03 lb ai/A had no clover in them at the 12th WAT (Table 4). These plots had 23 % clover cover before treatments were applied (Table 2).

Table 1. Treatments for the 2006 evaluation of experimental broadleaf weed control formulations for control of broadleaf weeds in turfgrass when applied to dry foliage.

Trials Treatments					Product Rate		
Trt No.	Product	Active Ingredient	Formulation	AI Rate (lb/A)	lb/acre	lb/1000 ft ²	g/25ftsq Plot
1	Untreated Check	-----	-----	-----	-----	-----	
2	S-12525	mesotrione	0.253 G	0.33	130.7	3	34.05
3	S-12526	mesotrione	0.383 G	0.5	130.7	3	34.05
4	S-12516	topramezone	0.0123 G	0.016	130.7	3	34.05
5	S-12618	topramezone	0.025 G	0.033	130.7	3	34.05
6	S-12519	sulfentrazone	0.19 G	0.25	130.7	3	34.05
7	S-12620	sulfentrazone	0.287 G	0.375	130.7	3	34.05
8	S-12522	carfentrazone	0.023 G	0.03	130.7	3	34.05
9	S-12619	carfentrazone	0.0352 G	0.046	130.7	3	34.05
10	S-12615	amicarbazone	0.19 G	0.25	130.7	3	34.05
11	S-12616	amicarbazone	0.343 G	0.448	130.7	3	34.05
12	S-12649	KJM-44	0.051 G	0.067	130.7	3	34.05
13	S-12650	KJM-44	0.102 G	0.134	130.7	3	34.05
14	Trimec Classic*	2,4-D + MCPP-p + dicamba	2.72 AS	1.38 (ae)	0.51 gal	1.5 fl oz	1.11ml
15	S-11995	Metsulfuron methyl	0.023 G	0.03	130.4	2.99	33.9

Table 3. Weed injury, phytotoxicity ratings on grass 2 and 4 WAT and weed evaluations 4 WAT.

	Product	Weed injury 2 WAT	Phyto ratings on grass 2 WAT	Turf quality 2 WAT	Dandelion numbers 4 WAT	Plantain numbers 4 WAT	Percentage Clover Cover 4 WAT	Weed Injury 4 WAT	Turf quality 4 WAT	Phyto ratings on grass 4 WAT
1	Untreated Check	2	6	6	15	14	20	0	6	0
2	S-12525	34	4	6	3	8	5	48	6	0
3	S-12526	37	2	6	3	9	2	45	6	0
4	S-12516	19	0	6	11	9	13	20	6	2
5	S-12618	28	2	6	16	14	12	22	6	0
6	S-12519	10	0	6	13	13	18	16	6	2
7	S-12620	12	0	6	16	11	18	30	6	0
8	S-12522	6	2	6	19	6	18	16	6	0
9	S-12619	10	0	6	16	4	21	16	6	0
10	S-12615	10	4	5	20	11	9	12	4	38
11	S-12616	10	27	4	17	1	2	10	2	78
12	S-12649	20	4	6	6	4	0	68	6	2
13	S-12650	20	4	5	4	8	0	68	6	0
14	Trimec Classic*	24	8	6	4	2	3	67	6	0
15	S-11995 LSD	28 8	2 7	6 1	4 12	3 NS	1 12	71 21	6 1	2 9

Table 4. Ratings conducted 8 and 12 WAT.

	Product	Number of Dandelions 8 WAT	Plantain numbers 8 WAT	Percent Clover Cover 8 WAT	Weed Injury 8 WAT	Turf quality 8 WAT	Phyto ratings on grass 8 WAT	Number of Dandelions 12 WAT	Plantain numbers 12 WAT	Percent Clover Cover 12 WAT	Weed Injury 12 WAT	Turf quality 12 WAT	Phyto ratings on grass 12 WAT
1	Untreated Check	32	10	8	0	5	24	26	11	6	3	8	2
2	S-12525	6	14	1	0	6	0	22	7	4	17	9	0
3	S-12526	14	10	1	0	6	2	25	13	1	10	9	0
4	S-12516	15	8	5	0	6	0	12	10	12	4	9	3
5	S-12618	32	9	0	0	6	2	24	14	3	6	8	5
6	S-12519	17	16	5	0	6	4	14	17	14	5	9	2
7	S-12620	25	10	15	0	6	0	15	6	7	5	8	6
8	S-12522	20	7	10	0	6	2	27	7	11	6	9	2
9	S-12619	21	4	5	0	6	4	25	2	6	11	7	2
10	S-12615	27	8	6	0	5	20	21	4	3	13	7	4
11	S-12616	24	1	1	0	3	45	30	0	1	2	4	6
12	S-12649	5	2	2	0	6	4	13	3	0	9	9	3
13	S-12650	2	4	0	0	5	24	7	4	0	5	9	0
14	Trimec Classic*	14	0	1	0	6	6	18	0	3	9	9	2
15	S-11995	6	2	1	0	6	0	17	2	0	6	9	5
	LSD	16	NS	NS	NS	NS	NS	14	NS	9	8	2	NS