

Scotts Field Phytotoxicity Testing Trial 2006

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Introduction:

The study was conducted to evaluate a series of premixed Quinclorac and Quinclorac + postemergence herbicide combinations for the Scotts Company. It was conducted at the Iowa State University turfgrass research area north of Ames, Iowa.

Materials and Methods:

The study was divided into two sections. The first was designed to evaluate phytotoxicity of the various combinations on a mixed stand of Kentucky bluegrass and fine fescues, with a primary emphasis on the fine fescues. The stand was three years old and was mown at 2.5 inches. The second section was a solid stand of mature large hairy and smooth crabgrass that had just began to form seedheads. Both areas were irrigated as needed starting 48 hours after application of treatments. Each material was applied with a commercial spray applicator supplied by the Scotts Co. The soil was a Nicollet clay loam with a pH of 7.3, 10 ppm P, and 102 ppm K. The herbicide combinations are listed in Table 1. Treatments were applied on 7/28/06 in 5 replications. The weather was clear and the temperature was 92 F. Visual data on % damage of turf and of the crabgrass were collected at 1, 4, 7, 14, 21, and 28 days after application. The scale was 0 to 100 % injury, with 100% injury being complete kill of the grass or weeds. Pictures of the first replication of each study were taken each time data were collected.

Table 1. Treatments applied in the 2006 Scotts Field Phytotoxicity trial.

	Product	1%	Active Ingredient	Dilution Rate (oz product/gal)
1	S12403 conc	1.53, 2.68, 0.65, 1.25	2,4-D, MCP, Dicamba, Quinclorac	2 fl oz/gal/400 ft ²
2	S12403 conc	1.53, 2.68, 0.65, 1.25	2,4-D, MCP, Dicamba, Quinclorac	3 fl oz/gal/400 ft ²
3	S12403 conc	1.53, 2.68, 0.65, 1.25	2,4-D, MCP, Dicamba, Quinclorac	4 fl oz/gal/400 ft ²
4	S12568 RTU	0.12, 0.22, 0.05, 0.1	2,4-D, MCP, Dicamba, Quinclorac	1 gal/400 ft ²
5	EH-1426 conc	7.27, 0.84, 3.49, 0.42	2,4-D, Dicamba, Quinclorac, Sulfentrazone	2 oz/gal/400 ft ²
6	EH-1428 RTU	0.253, 0.029, 0.121, 0.015	2,4-D, Dicamba, Quinclorac, Sulfentrazone	1 gal/400 ft ²
7	EH-1437 conc	6.42, 0.60, 2.13	2,4-D, Dicamba, Quinclorac	2.56 oz/gal/400 ft ²
8	Drive 75 DF + crop oil	75	Quinclorac	0.367 oz/1000 ft ² + 0.55 oz/1000 ft ² crop oil
9	untreated			

Results:

There were no visual effects of treatment at 1 day. By 4 days, visual differences among treatments were clearly visible (Table 2). Treatment 4, the ready to use product containing 2,4-D, MCP, Dicamba, and Quinclorac, was the only treatment to show significant damage to the fine fescue/Kentucky bluegrass turf at the 4th day after treatment. This continued through the 28th day of the study. Treatments 3 and 6 also produced visual damage to the turf during the 28 days of the study. While the damage to the turf was noticeable, at no time during the 28 days was the damage severe and no turf was killed by the treatments.

Treatments 3, 4, and 6 were also the most effective on crabgrass (Table 2). These three treatments were still showing damage to the crabgrass after 28 days. At 4 days after treatment, all materials caused significant damage to the crabgrass. The damage was actually quite impressive given the late date of application and the stage of development of the crabgrass. It is very difficult to control crabgrass at this stage late in the season. Treatments 4 and 6 were the most effective at reducing crabgrass through the 28 days of the study. While the crabgrass appeared to be nearly 100% dead in some of the replications treated with materials 4 and 6 in the first 14 days of the trial, much of the crabgrass did recover by the 28th day.

Table 2. Phytotoxicity ratings on turf and crabgrass during the 28 days after treatment. 0=no damage 100=dead grass.										
Treatment	% Injury Grass 4days	% Injury Weeds 4days	% Injury Grass 7days	% Injury weeds 7days	% Injury Grass 14days	% Injury weeds 14days	% Injury Grass 21days	% Injury weeds 21days	% Injury Grass 28days	% Injury weeds 28days
1. S12403 conc	0	34	0	42	4	25	0	4	0	0
2. S12403 conc	0	29	0	50	4	31	0	12	0	4
3. S12403 conc	2	58	4	68	13	49	12	28	4	10
4. S12568 RTU	18	79	20	85	21	87	22	57	16	26
5. EH-1426 conc	0	36	2	55	3	36	2	18	2	8
6. EH-1428 RTU	2	73	4	83	8	77	9	56	14	19
7. EH-1437 conc	2	26	0	56	2	42	4	14	0	6
8. Drive 75 DF + crop oil	0	60	0	66	0	53	0	35	0	8
9. untreated	0	0	0	0	0	0	0	0	0	0
LSD 0.05	4.2	14	5.7	13.8	6.5	17.7	5.3	21.6	7.2	10.8