Project: Effect of Primo, Triclopyr and Monosodium Methanearsonate Combinations on Kikuyugrass Control and Success of Fescue Overseeding.

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Summary: Effective and long lasting control of kikuyugrass is a goal that has so far eluded golf course superintendents and landscape managers. In this trial, a variety of combinations of Primo and other herbicides were tested for their ability to control kikuyugrass, prior to overseeding with tall fescue. Results showed that a three way combination of Primo plus the herbicides monosodium methanearsonate (MSMA) and triclopyr (Turflon) was partially successful in controlling kikuyugrass for 1 - 2 months, with variable control levels that ranged from 5% to 85%. When triclopyr was omitted from the mixture, however, no control of kikuyugrass was observed. A possible explanation for this unexpected lack of activity is the fact that the kikuyugrass was dormant, or just breaking dormancy at the time of the applications, and therefore did not take up the full treatment dose.

To determine at what rates Primo can be used effectively in combination with MSMA and/or triclopyr, it is recommended that this trial be repeated later in the year, when kikuyugrass is actively growing.

Materials and Methods: Plots were 5 feet by 10 feet and replicated 3 times in a split plot design that tested five different Primo combinations in the main plots. In the sub-plots, two different application timings of Primo combinations and two different overseeding treatments were tested (Table 1). Treatments were made on 2/5/96 and 3/1/96 using a CO_2 backpack sprayer moving at 3 mph. The sprayer was equipped with 8004VS flat fan nozzles and delivered 0.94 gallons per 1000 square feet.

The treatment area was located in The Ocean Hills, Leisure World housing development in Oceanside, CA. Prior to the first application, the turf consisted of high mown (approximately 2" in height) turf that was primarily kikuyugrass. Small percentages of Bermuda grass and tall fescue were also present, probably remnants of previous plantings.

Table 1. Treatments tested

Trt.#	Product	oz per 1000	Date Applied	Overseed date
1a.	Primo MSMA	1.5 1.5	2/5/96	3/1/96
1b.	Primo MSMA	1.5 1.5	2/5/96, 3/1/96	3/18/96
2a.	Primo MSMA	0.5 1.5	2/5/96	3/1/96
2b.	Primo MSMA	0.5 1.5	2/5/96, 3/1/96	3/18/96
3a.	Primo MSMA	0.75 1.5	2/5/96	3/1/96
3b.	Primo MSMA	0.75 1.5	2/5/96, 3/1/96	3/18/96
4a.	Primo MSMA	1.0 1.5	2/5/96	3/1/96
4b.	Primo MSMA	0.75 1.5	2/5/96, 3/1/96	3/18/96
5a.	Primo MSMA triclopyr	0.75 1.5 0.40	2/5/96	3/1/96
5b.	Primo MSMA triclopyr	0.75 1.5 0.40	2/5/96, 3/1/96	3/18/96
6a.	Control	---	3/1/96	
6b.	Control	---	3/18/96	

Plots were overseeded with Bonsai tall fescue at 10 lb/1000 square feet on either 3/1/96 or 3/18/96. Plots were mowed to 1/2" prior to overseeding and application on 3/1. Plots were not mowed prior to the 3/18 overseeding. Seed was applied in three passes with a Gandy drop spreader. Calibration to deliver 10 lb/1000 square feet

resulted in a Gandy setting of 50. Plots were irrigated following overseeding. Kikuyugrass control was assessed visually on 3/18/96, 4/16/96 and 5/24/96 (see Table 2).

Results and Discussion: Plots treated with any of the Primo combination treatments showed the signs of the growth inhibition that are typical following Primo applications. However, only one of the Primo combination treatments resulted in significant control of kikuyugrass. This was treatment 5, a combination of Primo, MSMA and triclopyr that was applied once (5a) or twice (5b). On both rating dates, control was variable from plot to plot, however. This variability could be due to a number of factors including biotype differences from one replicate to the next, fertility differences or differences in shading (replicates 2 and 3 had the most shade from trees, while replicate 1 was unshaded). A slight(<5%) reduction in kikuyugrass stand was observed for treatment 1b (Primo 1.5 oz + MSMA 1.5 oz applied twice).

Overall, the results of this trial were less dramatic than expected, with few treatments showing any response to Primo treatments, and none of the treatments causing acceptable and consistent levels of kikuyugrass control It is probable that at the time the treatments were made (February 5 and March 1) the kikuyugrass was still partially dormant and therefore did not take up the full dosage of each treatment. The fact that two applications of treatment 5 had a stronger effect than one application may have less to do with the multiple treatment, and more to do with the fact that the kikuyugrass broke dormancy right around the time of the second treatment. It is likely that treatments made later in March and April would have had a more significant impact on kikuyugrass control.

Overseeding with tall fescue was unsuccessful for all treatments (including the non-treated control) at either of the overseeding dates, with no obvious germination or stand development observed. The lack of intensive maintenance at this site (lack of sufficient irrigation and fertility practices) is probably the cause of limited fescue stand establishment.

Table 2. Evaluation of Primo combinations for control of kikuyugrass. Visual ratings were made on 3/18/96 and 4/16/96.

Trt#	Rating Date	% Kikuyugrass Control Rep 1	Rep 2	Rep 3
1a	3/18	0	0	0
1a	4/16	0	0	0
1b	3/18	0	0	0
1b	4/16	0	<5	0
2a	3/18	0	0	0
2a	4/16	0	0	0
2b	3/18	0	0	0
2b	4/16	0	0	0
3a	3/18	0	0	0
3a	4/16	0	0	0
3b	3/18	0	0	0
3b	4/16	0	0	0
4a	3/18	0	0	0
4a	4/16	0	0	0
4b	3/18	0	0	0
4b	4/16	0	0	0
5a	3/18	0	0	20
5a	4/16	0	0	0
5b	3/18	0	0	70
5b	4/16	5	20	85
6a	3/18	0	0	0
6a	4/16	0	0	0
6b	3/18	0	0	0
6b	4/16	0	0	0

On the 5/24/96 rating, the only treatment effect observed was in replicate 3 of treatment 5b, where 50% kikuyugrass control occurred. The lack of treatment effects elsewhere was due to the fact that kikuyugrass had begun to recolonize the plots in treatment 5b at the time of this rating.

Photographs (all photos taken 3/18/96)

1762-1	Replicate # 1
1762-2	Replicate #1
1762-3	Replicate #2
1762-4	Replicate #3
1762-5	Replicate #3
1762-6	Trt 1, Replicate #1
1762-7	Trt 3, Replicate #1
1762-8	Trt 4, Replicate #1
1762-9	Trt 5, Replicate #1
1762-10	Trt 6, Replicate #1
1762-11	Trt 2, Replicate #1
1762-12	Overall plot area: Brown strips of turf are the result of 3/1 mowing, and are not treatment related
1762-13	Replicate #3. Note control levels in treatment #5
1762-14	Replicate #3 Note control levels in treatment #5
1762-15	Replicate #3 Note control levels in treatment #5