

DEMONSTRATION OF NON-SELECTIVE CONTROL OF VARIOUS WEEDS WITH ROUNDUP PROMAX

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INTRODUCTION

The objective of this study was to assess the ability of Monsanto's Roundup ProMAX to suppress various weeds with an ultra low (0.134 qt/A) and normal rate (5.44 qt/A) of the herbicide. Roundup ProMAX was applied in 44 gal H₂O per acre on the dates listed in the data table.

MATERIALS AND METHODS

This study was initiated at the Error! Reference source not found.'s Plant Science Research and Education Facility located in Storrs, CT. The weedy site was prepared by removing the existing Kentucky bluegrass sod in the fall prior to the initiation of the experiment. Bare soil remained during the winter months and weeds allowed to naturally establish during the fall and spring prior to the study. When treatments were initiated, the plots consisted of a mixed stand of weeds including crabgrass, yellow nutsedge, mouseear chickweed and various other weeds.

The site was mowed approximately every 2 weeks to a height of 3 inches, but was not mowed after treatments were applied. Treatments consisted of two rates of Roundup ProMAX. The first treatment was applied on 2 Jul and mimicked a very low application rate of 0.134 qt/A. The second treatment of 5.44 qt/A was applied on 11 Jul.

All treatments were applied in 1.0 gal water per 1000 sq ft using a CO₂ backpack sprayer equipped with a single AI9504E flat fan nozzle. Treatments were not irrigated, but were subject to natural rainfall. All treatments and application dates are listed in the data table. Plots measured 4 ft x 6 ft, and were arranged in a randomized complete block with four replications. Plots were rated visually for percent plot area exhibiting phytotoxic symptoms and severity of the injury to living plant materials. All ratings and rating descriptions are detailed within or footnoted below the data tables.

RESULTS AND DISCUSSION

Within 9 days of the initial application, low to moderate injury was observed within plots treated with 0.134 qt/A of ProMAX. On 11 Jul, 63% of the living plant material within plots were exhibiting phytotoxic symptoms. Injury to the weeds, however, was considered low on 11 and 20 Jul. Nine days after the initial application of ProMAX at the 5.44 qt/A rate, however, severe phytotoxic symptoms and injury were observed. In this case, 98% of the plot area was exhibiting phytotoxic symptoms and severe injury ratings (9.0). All weed species within these plots was essentially dead within the 9 to 10 day period following application. Continued rating of the plots following this death revealed that weeds within plots treated with the low rate of ProMAX began to recover and/or new weeds began to fill in the voids. On 1 Aug, plots treated with the 5.44 qt rate of ProMAX continued to exhibit near complete control of weeds within the plots. Phytotoxicity to the untreated control plots on 1 and 15 Aug was due to drift from the application on 11 Jul. On the final rating date (15 Aug), plots treated with ProMAX at 5.44 qt/a continued to display excellent control, but plots had an average of 7% weeds. For the low rate, weeds continued to encroach into treated plots and approximately 72% of the plot area had living weeds.

Results of this study indicate that while ultra low rates may be effective at reducing weed populations, excellent control can be achieved with Roundup ProMAX applied at the 5.44 qt/A rate. The rapid burndown of weeds following application is highly desirable in situations where renovation to a desirable turfgrass species is required in a short time period. In the future, varying rates may be evaluated to determine the optimum application rate to control varying weed species. Additional research may seek to identify the optimum timing and establishment of desirable turfgrass species following application of ProMAX.

Table 1. Turfgrass injury and percent phytotoxicity following various weeds with Roundup PROMAX.

Treatment and rate in qt/a	Application ^z Timing	Percent phytotoxicity ^y				Injury ^x	
		11 Jul	20 Jul	1 Aug	15 Aug	11 Jul	20 Jul
Roundup PROMAX 0.134 qt	A	63 a ^w	52 b	43 b	28 b	3.8 a	3.0 b
Roundup PROMAX 5.44 qt	B	0 b	98 a	99 a	93 a	0.0 b	9.0 a
Untreated.....	-	0 b	0 c	12 c	8 b	0.0 b	0.0 c

^z Treatments were applied as follows: A = 02 Jul, B=11 Jul.

^y Percent of the plot area exhibiting signs of phytotoxicity was visually rated on a 0 to 100 scale where 0 = no phytotoxicity observed and 100 = entire plot area brown or dead.

^x Turfgrass injury was rated on a 0 to 9 scale where 0 = no injury visible and 9 = entire plot brown or dead.

^w Means in a column followed by the same letter are not significantly different at $P \leq 0.05$ level according to the Fisher's protected least significant difference t-test.