

Response of Mondo Grass and Weeds to Preemergence Herbicides

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Objective

Mondo grass (*Ophiopogon japonicus*), a member of the lily family, is a widely used ground cover in commercial and residential landscapes. The slow growth of mondo grass allows for intense weed pressure during establishment. Several preemergence herbicides were evaluated for weed control on newly planted mondo grass.

Methods

The experimental site was at a nursery in Waimanalo, Oahu, Hawaii. Mondo grass was planted in April, the entire planting was covered with 40% shade cloth to reduce transplant shock, and overhead irrigation was applied for three minutes twice daily for the duration of the experiment. Three days after planting, the shade cloth was removed and the chemical treatments were applied.

The herbicides evaluated and their rates of application are given in Table 1. Application rates were set at the lower level specified on the product label and double that rate. Ronstar was evaluated in two forms, 2% granular and 50% wettable powder. Snapshot was formulated as an 80% dry flowable granulated powder and Image was a 1.5 (lb a.i./gal) emulsifiable concentrate.

The treatments were visually rated for injury to mondo grass and control of weeds on May 20, 42 days after spray or granular application (DAS). In this rating system, 0 = no weed control, 10 = complete weed control, and 7 = minimum control that is commercially acceptable. For mondo grass injury, 0 = no injury, 10 = complete kill, and 3 or more is excessive for use in commercial landscapes.

Weeding time required for returning 5.2 ft² in each treatment to a weed-free condition were recorded 42 days

after treatment. Cost analysis for each treatment was prepared based on the cost of each chemical, its rate of application, and the cost for labor to remove weeds (labor for weeding = \$7.00/hr). Costs of chemicals were obtained from a distributor on Oahu.

Results

Because mondo grass grows slowly, it was hard to determine if any of the treatments inhibited growth. Only the high rate of Image caused noticeable burning of leaf tips. Weed populations varied widely in this experiment, making conclusions about control of individual species difficult. Treatments were rated for “composite weed control” to reflect herbicide performance regardless of the weed species present (Table 2). However, a brief discussion on the control of some individual species will be presented.

Table 1. Herbicide treatments evaluated on newly planted mondo grass. Treatments were applied three days after planting.

Treatment	Form	Rate (per acre)	Amount per 1000 ft ²	
			dry oz	fluid oz
Ronstar	2% G	100 lb	36.7	
Ronstar	2% G	200 lb	73.4	
Ronstar	50 WP	4 lb	0.4	
Ronstar	50 WP	8 lb	0.8	
Snapshot	80 DF	2.5 lb	0.6	
Snapshot	80 DF	5.0 lb	1.2	
Image	1.5 EC	21 oz		1.0
Image	1.5 EC	42 oz		2.0
Untreated	—	—	—	—

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Caution: Pesticide use is governed by state and federal regulations. Read the pesticide label to ensure that the intended use is included on it, and follow all label directions. Pesticides and pesticide uses mentioned in this publication may not be approved for Hawaii, and their mention is for information purposes only and should not be considered a recommendation.

Ronstar showed good control of graceful spurge but showed weakness on fireweed (*Erechtites hieracifolia* [L.] Raf.) and bitter cress. The WP formulation provided slightly better weed control than the G formulation, possibly due to improved soil coverage with the spray application. Snapshot showed excellent control of all weeds except fireweed, which was adequately controlled only at the higher level of application. Image showed good to excellent control of all weeds present.

Weeding times were reduced at the higher rates of herbicide application for all materials except Image (Table 3). Weeds in the Image plots were much smaller than in other plots. Their small size extended weeding times for Image plots in comparison to other treatments with larger weeds that were easier to remove. This was interpreted to mean that Image extends the time before large, unsightly weeds need to be removed.

Image was the most expensive herbicide per pound of active ingredient (\$216.27/lb), and Snapshot at the higher level of application provided the lowest overall cost when labor expenses were included (\$5.90/1000 ft²).

Acknowledgment

Thanks are extended to Tom Staton of Quality Turfgrass for providing the experimental site and to DowElanco and Rhone-Poulenc for providing test materials and financial support for research supporting Hawaii's "Green Industry."

Table 2. Ratings of mondo grass injury and effectiveness of weed control in response to herbicides applied to a newly planted site, 42 days after sowing.

Treatment	Form	Rate (per acre)	Mondo grass injury	Weed control ^y
Ronstar	2% G	100 lb	0.3	5.8 a ^z
Ronstar	2% G	200 lb	0.5	6.5 a
Ronstar	50 WP	4 lb	1.0	6.3 a
Ronstar	50 WP	8 lb	1.5	7.0 a
Snapshot	80 DF	2.5 lb	0.0	6.3 a
Snapshot	80 DF	5.0 lb	0.5	8.5 a
Image	1.5 EC	21 oz	0.5	7.8 a
Image	1.5 EC	42 oz	1.0	8.0 a
Untreated	—	—	0.0	1.0 b
Level of significance			NS	1%

^yWeeds present in the experimental area consisted of bittercress (*Cardamine flexuosa*), ivy gourd (*Coccinia grandis*), graceful spurge (*Euphorbia lomerifera*), and morning glory (*Ipomea* sp.)

^zMeans followed by the same letter within a column are not significantly different according to Duncan's multiple range test. NS = not significantly different.

Table 3. Cost analysis for weed control of 1000 ft² in a newly established mondo grass planting 42 days after treatment.

Treatment	Form	Rate (per acre)	Weeding time (min)	Cost (\$) ^y		
				Labor	Herbicide	Total
Ronstar	2G	100 lb	42	5.76	3.29	9.05
Ronstar	2G	200 lb	19	2.16	6.58	8.74
Ronstar	50WP	4 lb	68	7.93	2.25	10.18
Ronstar	50WP	8 lb	34	3.96	4.50	8.46
Snapshot	80DF	2.5 lb	71	8.28	2.59	10.87
Snapshot	80DF	5.0 lb	6	0.72	5.18	5.90
Image	1.5EC	21 oz	52	6.12	1.22	7.34
Image	1.5EC	42 oz	52	6.12	2.33	8.56
Untreated	—		99	11.53	—	11.53

Herbicide	Smallest unit	Price ^z (\$/unit)	Price (\$/lb a.i.)
Ronstar 2G	50 lb	71.75	71.75
Ronstar 50WP	2 lb	49.00	24.50
Snapshot 80DF	1.25 lb	56.45	56.45
Image 1.5EC	1 quart	81.10	216.56

^yCost of manual weed removal does not include cost of employee benefits, and total cost does not reflect cost of labor for chemical applications.

^zPrice as of May 1994.