

Evaluation of Marengo “Verge” formulation in comparison to the Marengo “Eco” formulation.

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Significance to the industry. Preemergence herbicides are of the utmost importance to the nursery and landscape industries. Marengo (indaziflam) is a new preemergence herbicide developed by Bayer Corp. that has great potential for nursery and landscape use. However, the formulation of the active ingredient can affect herbicide activity, increase worker safety, and have effects on the environment. OHP has developed a “verge” formulation that decreases dust, is easier to spread, and spreads more evenly than the original “eco” formulation developed by Bayer. The “verge” technology has been applied to Biathlon herbicide, also distributed by OHP. The objective of this study was to evaluate any differences in weed control of four common nursery weeds between the “verge” formulation and the “eco” formulation.

Materials and Methods. Four weed species were selected to determine efficacy, which included yellow foxtail (*Setaria glauca*), large crabgrass (*Digitaria sanguinalis*), spiny sowthistle (*Sonchus asper*), and common yellow woodsorrel (*Oxalis stricta*). 30 seeds of one species/container were spread over the top of #1 (one gal.) trade size containers on 7 July 2014 which had previously received a topdressing of 17-5-11 Osmocote Pro (Everris Co.) at 1 tablespoon/container. The seeds were watered in with two, 0.5” irrigation events over two days before treatments were applied. Three rates of Marengo “verge” or “eco” were then applied over the top of the containers using shaker jars; treatments consisted of each formulation of 100 lbs/ac, 200 lbs/ac, or 400 lbs/ac. The herbicides were watered in with another 0.5” irrigation event, and the pots continued to receive daily irrigation events totaling at least 0.5” per day. Evaluations consisted of weed counts at 1 WAT (week after treatment), 2 WAT, 4 WAT, 8 WAT, and 12 WAT and a weed fresh weight at 8 and 12 WAT. The trial was set up in a completely randomized design for each weed species (to decrease competition effects), with each treatment consisting of five replications and 2 subsamples per replication. One subsample was harvested at 8 WAT and the other at 12 WAT. Treatments were compared to an untreated control. Treatment means were separated using lsmeans in Proc Mixed using SAS® software with $\alpha = 0.05$.

Results and discussion. Both formulations at all rates provided excellent control until 8 WAT (Table 1). At 12 WAT, there was some separation between the 100 lb/ac rate and 400 lb/ac rate of both formulations with the yellow foxtail, common yellow woodsorrel and spiny sowthistle. The large crabgrass continued to be controlled by all rates of both formulations (Table 1). The reduced control after 8 WAT concurs with earlier studies that included large crabgrass and common yellow woodsorrel (2013 Yearly Research Summary) and two applications are required for season long common yellow woodsorrel control (data not shown). This data also supports

the “verge” technology in that there are no differences between the two formulations, which indicates that the “verge” technology can be utilized.

Table 1. Weed counts and fresh weight of four container weed species over 12 weeks from two formulations of Marengo herbicide.

Spiny Sowthistle

Herbicide	Rate/ac	1 WAT ^z	2 WAT	4 WAT	8 WAT	fresh weight	12 WAT	fresh weight
Verge	100 lbs	0.1 ^y a	0.1 a	0.1 a	0.2 a	0.0 a	11.4 b	0.0 ^x a
Eco	100 lbs	0.0 a	0.2 a	0.2 a	0.2 a	0.0 a	8.4 ab	18.7 a
Verge	200 lbs	0.0 a	0.1 a	0.0 a	0.0 a	0.0 a	8.0 ab	0.0 a
Eco	200 lbs	0.1 a	0.1 a	0.1 a	0.0 a	0.0 a	2.8 ab	0.0 a
Verge	400 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.8 a	0.0 a
Eco	400 lbs	0.1 a	0.2 a	0.1 a	0.1 a	0.0 a	0.0 a	0.0 a
Untreated	--	1.4 b	1.7 b	1.2 b	1.3 b	68.5 b	9.2 ab	81.1 b

Large crabgrass

Herbicide	Rate/ac	1 WAT	2 WAT	4 WAT	8 WAT	fresh weight	12 WAT	fresh weight
Verge	100 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Eco	100 lbs	0.0 a	0.0 a	0.1 a	0.0 a	0.0 a	0.8 a	0.0 a
Verge	200 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Eco	200 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Verge	400 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Eco	400 lbs	0.0 a	0.0 a	0.0 a	0.1 a	0.0 a	0.4 a	26.0 a
Untreated	--	1.3 b	2.4 b	2.5 b	1.7 b	77.4 b	2.6 b	134.6 b

Yellow foxtail

Herbicide	Rate/ac	1 WAT	2 WAT	4 WAT	8 WAT	fresh weight	12 WAT	fresh weight
Verge	100 lbs	0.2 a	0.5 a	0.4 a	0.4 a	29.8 b	1.6 abc	0.0 a
Eco	100 lbs	0.1 a	0.2 a	0.1 a	0.1 a	0.3 ab	3.4 b	0.0 a
Verge	200 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	1.2 ab	0.0 a
Eco	200 lbs	0.1 a	0.2 a	0.1 a	0.0 a	0.0 a	1.8 abc	0.0 a
Verge	400 lbs	0.0 a	0.0 a	0.0 a	0.1 a	0.0 a	0.4 a	0.0 a
Eco	400 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	1.4 ab	0.0 a
Untreated	--	2.8 b	5.2 b	3.7 b	2.8 b	135.1 c	3.6 c	137.0 b

Common yellow woodsorrel

Herbicide	Rate/ac	1 WAT	2 WAT	4 WAT	8 WAT	fresh weight	12 WAT	fresh weight
Verge	100 lbs	0.0 a	0.0 a	0.3 a	0.3 a	3.6 a	4.2 bc	0.0 a
Eco	100 lbs	0.0 a	0.0 a	0.3 a	0.4 a	7.2 a	4.8 c	0.0 a
Verge	200 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	2.4 abc	0.0 a
Eco	200 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	1.2 ab	0.0 a
Verge	400 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.4 ab	0.0 a
Eco	400 lbs	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Untreated	--	0.1 b	0.0 a	3.4 b	2.5 b	31.2 b	5.6 c	60.3 b

z = weeks after treatment

y = Treatment means followed by the same letter in the same column are not significantly different based on lsmeans ($\alpha = 0.05$)

x = fresh weights are expressed in grams