

Effect of Alternative Control Products on the Reduction of Dandelion in Turf

J.B. Ross and M.A. Anderson

Summary

Three registered weed control products, that are marketed as alternatives to traditional chemical herbicides were tested on Olds College campus. Two applications of each of the products were applied under warm and sunny conditions. Sarritor proved to be ineffective and at no time over the eight week trial period was there any mycelium formation or damage to the dandelion. For both the Weed B Gon and Adios Ambros, an initial discolouration and distortion of the dandelion leaves occurred. However, by day 14 new shoots were observed growing from the crowns of the dandelion. By day 56 after the first application there was only a 10% reduction in dandelions.

Introduction

The adoption of new weed management policies and regulations in many municipalities are forcing the turfgrass industry to look for new products and ways of controlling undesirable vegetation. Currently, we see words like natural, organic, or eco-friendly being used to market alternatives to traditional chemical control products. While some products attempt to achieve control from natural occurring organisms, other products are new formulations of old remedies or throw backs to the pre-chemical age of pest control.

Currently, the PMRA, Canada's regulatory agency has allowed alternative products with low mammalian and/or environmental toxicity characteristics to be fast tracked through the registration process. The efficacy and performance of many of these alternative products were not thoroughly evaluated prior to registration. Before committing resources and manpower to an alternative weed control, turf managers require a better understanding of how these products perform.

Three registered alternative weed control products, currently being marketed as alternatives to the traditional chemical herbicides, were tested at Olds College.

The first of these products was the biological herbicide, Sarritor. According to the label, Sarritor is registered to control dandelions and other broad leaf weeds in turf, using the naturally occurring fungus, *Sclerotinia minor*, as its active ingredient. The fungus is coated on a dry granular carrier which is applied directly onto the weed. The fungus develops as mycelium on the leaves and then penetrates the weed and feeds on the plant's tissues when activated by moisture. Sarritor was reported to work best at temperatures between 18 and 24 degrees C.

Previously, the PTRC in cooperation with several municipalities throughout Alberta and Saskatchewan, had conducted dandelion management trials which incorporated Sarritor. Various approaches to handling this biological herbicide were tested including: the application of different batches of the product, watering to assure the treatments remained consistently moist, and testing in shade to reduce the effects of direct sunlight. In spite of these various tests, producing a fungal infection proved to be problematic.

Also tested were two new contact herbicides. The first product was EcoSense Weed-B-Gon, a newly formulated product that uses iron as its active ingredient. Weed-B-Gon is applied as a fast acting ready to use spray. The iron is reported to be absorbed into the cell structure of the plant. As the iron begins to oxidize the plant tissue, the plant is destroyed from the inside out causing the weed to dry up and turn black.

The second contact product was the herbicide Adios Ambros distributed by Herbanatur INC. This product is registered for control of ragweed and has been reported to have some effect on dandelions, although there is currently insufficient research data to support the registration of this product for this purpose. Adios Ambros is a sodium chloride based contact desiccant. The product is mixed with water and liberally applied to the leaf area of targeted weed species.

The objective of this trial was to test these alternative pest control products for control or suppression of dandelion in turf.

Methodology

Plots that had a high natural infestation of dandelion were laid out on low maintenance Kentucky bluegrass/fine leaf fescue turf located at Olds College. Plot size was 0.5 X 0.5 meters and treatments were randomized within four replicates of the trial. Treatments included the three products mentioned above and information about these products is listed in table 1.

Table 1 – Treatments and application directions.

Product	Active Ingredient	Application Directions
Sarritor	Sclerotinia minor A biological agent	1g of product applied directly to the dandelion crown using the special product dispenser. The plots were immediately watered by hand after the treatments had been applied.
Weed-B-Gon	Iron in the form FEHEDTA	The product was formulated as a ready to use spray. Sufficient spray solution was applied to the dandelion foliage to assure that the leaf area was thoroughly wet.
Adios Ambros	Sodium chloride Salt	120g of product was mixed with 1 litre of water. Sufficient spray solution was applied to the dandelion foliage to assure that the leaf area was thoroughly wet.
Untreated	None	No treatment was applied.

The study was initiated on July 8, 2011 after the spring bloom of dandelion was complete. The ready to use treatments were applied following the application directions listed (table 1). The applications were made at midday when the environmental conditions were most conducive to plant uptake of the treatments (mid day temperature of 26°C and no rainfall for 24hours). On August 5, twenty-eight days after the initial treatment, the plots received a second application. Once again the applications were made at midday when the environmental conditions were most conducive to plant uptake of the products (mid day temperature of 23°C and no rainfall for 24 hours) (Table 1).

Prior to the application of the treatments, five dandelion plants within each plot were selected and their location marked. Plots were rated for the effect of the treatments on both the selected plants as well as the surrounding turf. Injury on the dandelions and the turf was rated based on the rating scale listed below. Dandelion mortality was based on the number of live marked plants in the individual plots. Ratings were recorded on a weekly basis over the course of the trial period.

	1 – 5 scale								
Sarritor	1	1	1	1	1	1	1	1	1
Weed B Gon	4	4	3	2	1	4	4	2	2
Adios Ambros	4	4	3	2	1	4	2	2	2
Untreated	1	1	1	1	1	1	1	1	1

Table 3 – Dandelion mortality at various days after initial treatment (DAT).

Rate	4	7	14	21	28	35	42	49	56
	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT
	% of dead plants								
Sarritor	0	0	0	0	0	0	0	0	0
Weed B Gon	0	0	0	0	0	10%	20%	20%	10%
Adios Ambros	0	0	0	0	0	5%	25%	15%	10%
Untreated	0	0	0	0	0	0	0	0	0

Table 4 – Turf injury (1-5 scale) at various days after initial treatment (DAT).

Rate	4	7	14	21	28	35	42	49	56
	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT	DAT
	1 – 5 scale								
Sarritor	1	1	1	1	1	1	1	1	1
Weed B Gon	1	2	2	1	1	1	1	1	1
Adios Ambros	2	3	3	2	2	3	2	2	2
Untreated	1	1	1	1	1	1	1	1	1

Discussion

For the Sarritor, a consistent formulation that will infect the host dandelion will need to be developed before this product can be used with any degree of confidence. Despite testing various factors no mycelium was ever observed in any of the test areas.

For the Weed B Gon and the Adios Ambros, the number of applications and the interval between applications may need to be evaluated. It appeared that recovery had begun at day 14 after the first application and recovery was complete by day 28. Making a second application at day 14 may prove to be a more effective application interval.