

NONSELECTIVE ORGANIC HERBICIDES

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Introduction

There has been an increased interest in the use of organic non-selective weed control products as 'alternatives' to conventional synthetic organic products such as Round-up or Finale. However, little is known about their overall efficacy and use. Typically they contain various combinations of citric and/or acetic acid with various plant oils. To help assess their qualities and limitations, a small demonstration project was set up to evaluate their overall effectiveness and use in destroying a perennial 'weed'; in this case Kentucky bluegrass. These will be compared to results obtained with Round-up and Finale along with acetic acid (20% concentration) used at rates similar to those employed in the USDA's Agricultural Research Service studies. Two additional 'conventional' non-selective products, diquat and pelargonic acid were also included for comparison. Unlike Round-up or Finale, the 'natural' organic products as well as diquat and pelargonic acid do not exhibit systemic modes of action.

Materials and Methods

Plots are located at the Turfgrass Outreach and Education (TROE) center on the University of Minnesota St. Paul campus. Eight nonselective herbicides, 4 organic and 4 synthetic, were sprayed at their labeled rates (Table 1). Treatments were applied 28, 21, 14, 7, and 1 day before field day. Applications were made using a CO₂ powered backpack sprayer calibrated to deliver 80 gallons/acre using two TeeJet XR8010 nozzles. Treatments were applied in the summer to actively growing Kentucky bluegrass mowed at 1.5 inches and irrigated to prevent stress.

Results of and efficacy of treatments will be observed and discussed at field day.

Table 1. Treatment list and application rates.

Trt #	Product	Active Ingredient	Rate
1	All-Down	Citric acid, Garlic	RTU
2	Burn Out II	Clove oil, Sodium lauryl sulfate	RTU
3	Weed-A-Tak	Citric acid, Clove oil, Cinnamon oil	RTU
4	Scythe	Pelargonic acid	7%
5	Reward	Diquat	2 pt/acre
6	Razor Pro	Glyphosate	2 qt/acre
7	Finale	Glufosinate	4 qt/acre
8	Acetic Acid	Acetic Acid	20%

Table 2. Plot layout with treatment numbers and the number of days before field day the application was made.

Untreated 1 d	Trt 1 1 d	Trt 2 1 d	Trt 3 1 d	Trt 4 1 d	Trt 5 1 d	Trt 6 1 d	Trt 7 1 d	Trt 8 1 d
Untreated 7 d	Trt 1 7 d	Trt 2 7 d	Trt 3 7 d	Trt 4 7 d	Trt 5 7 d	Trt 6 7 d	Trt 7 7 d	Trt 8 7 d
Untreated 14 d	Trt 1 14 d	Trt 2 14 d	Trt 3 14 d	Trt 4 14 d	Trt 5 14 d	Trt 6 14 d	Trt 7 14 d	Trt 8 14 d
Untreated 21 d	Trt 1 21 d	Trt 2 21 d	Trt 3 21 d	Trt 4 21 d	Trt 5 21 d	Trt 6 21 d	Trt 7 21 d	Trt 8 21 d
Untreated 28 d	Trt 1 28 d	Trt 2 28 d	Trt 3 28 d	Trt 4 28 d	Trt 5 28 d	Trt 6 28 d	Trt 7 28 d	Trt 8 28 d

South