Demonstration of new herbicide technologies in non-crop plots at Rochester, MN in 2014
Behnken, Lisa M., Fritz R. Breitenbach, Jeffrey Gunsolus, and Ryan Miller

The objective of this demonstration was to show the efficacy, limitations, and management concerns with new weed control systems. The goal was to introduce the new technologies and highlight strengths and weakness of the herbicides to assist growers with more successful weed management. The trial was implemented in a non-crop situation using a randomized complete block design replicated three times. Herbicides were applied preemergence (PRE) and postemergence (POST I, POST II, and POST III) to evaluate weeds control and duration of residual activity. Engenia, 2,4-D amine, and Callisto were applied PRE, POST I (1-2 inch weeds), POST II (3-4 inch weeds), and POST III (5-6 inch weeds). Balance Pro was only applied as a PRE treatment. In total, fourteen treatments were demonstrated.

Table 1 provides application timing and environmental conditions. Table 2 provides details of each treatment. Visual differences were observed in relation to residual control, efficacy of the herbicides on large weeds, and the spectrum of weeds controlled. Photographs highlighting each treatment over time are included in this report and provide a visual story of the limitations of each treatment. The demonstration was shown and discussed during the 2014 Crop Management Field Day. (University of Minnesota Extension Regional Office, Rochester, and Southern Research and Outreach Center, Waseca, MN).

<table>
<thead>
<tr>
<th>Trt No.</th>
<th>Treatment Name</th>
<th>Rate</th>
<th>Rate Unit</th>
<th>Growth Stage</th>
<th>Appl Code</th>
<th>Application Description</th>
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<td>1</td>
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<td>25.6 fl oz/a</td>
<td>PRE</td>
<td>A</td>
<td>PRE</td>
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<td>2</td>
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<td>2 qt/a</td>
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<tr>
<td>3</td>
<td>CALLISTO</td>
<td>6 fl oz/a</td>
<td>PRE</td>
<td>A</td>
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<td>12.8 fl oz/a</td>
<td>0.25 % v/v</td>
<td>EAPOWE</td>
<td>B</td>
<td>1-2 INCH WEEDS</td>
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<tr>
<td></td>
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<tr>
<td>6</td>
<td>2,4-D AMINE</td>
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<td>EAPOWE</td>
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<td>1-2 INCH WEEDS</td>
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<td>1 % v/v</td>
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<td>1-2 INCH WEEDS</td>
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<td>COC</td>
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</tr>
<tr>
<td></td>
<td>N-PAK AMS</td>
<td>3.3 gal/100 gal</td>
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<td>EAPOWE</td>
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<td>1-2 INCH WEEDS</td>
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<td>MIDPOWE</td>
<td>C</td>
<td>3-4 INCH WEEDS</td>
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<td>3-4 INCH WEEDS</td>
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<td>LAPOWE</td>
<td>D</td>
<td>5-6 INCH WEEDS</td>
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<td>1 % v/v</td>
<td>LAPOWE</td>
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<tr>
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<td>3.3 gal/100 gal</td>
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<td>LAPOWE</td>
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Table 1. Application timing and environmental conditions.

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<th>Application Date:</th>
<th>May-6-2014</th>
<th>May-27-2014</th>
<th>Jun-6-2014</th>
<th>Jun-16-2014</th>
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<td>4:00 PM</td>
<td>12:00 PM</td>
<td>1:50 PM</td>
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<td>Application Timing:</td>
<td>PRE</td>
<td>POST I</td>
<td>POST II</td>
<td>POST III</td>
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<td>Applied By:</td>
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<td>Dew Point:</td>
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<td>Wind Direction:</td>
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<td>SE</td>
<td>S</td>
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<td>Dew Presence (Y/N):</td>
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<td>Soil Temperature, Unit:</td>
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<td>% Cloud Cover:</td>
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Trt. 1 (SOA 4)
ENGENIA 25.6 oz/a
PRE Sprayed 5/6/14

June 3, 2014

June 16, 2014
Trt. 1 (SOA 4)
ENGENIA 25.6 oz/a
PRE Sprayed 5/6/14

June 30, 2014
Trt. 5 (SOA 4)
ENGENIA 12.8 oz/a + Induce NIS 0.25% v/v
POST I (1-2” weeds) sprayed 5/27/14

June 3, 2014

June 16, 2014
Trt. 5 (SOA 4)
ENGENIA 12.8 oz/a + Induce NIS 0.25% v/v
POST I (1-2” weeds) sprayed 5/27/14
Trt. 8 (SOA 4)
ENGENIA 12.8 oz/a + Induce NIS 0.25% v/v
POST II (3-4” weeds) sprayed 6/6/14

June 3, 2014

June 16, 2014
Trt. 8 (SOA 4)
ENGENIA 12.8 oz/a + Induce NIS 0.25% v/v
POST II (3-4” weeds) sprayed 6/6/14

June 30, 2014
Trt. 11 (SOA 4)
ENGENIA 12. 8 oz/a + Induce NIS 0.25% v/v
POST III (5-6” weeds) sprayed 6/16/14
Trt. 11 (SOA 4)  
ENGENIA 12. 8 oz/a + Induce NIS 0.25% v/v  
POST III (5-6” weeds) sprayed 6/16/14  

June 30, 2014
Trt. 2 (SOA 4)
2,4-D AMINE 2 qt/a
PRE Sprayed 5/6/14

June 3, 2014

June 16, 2014
Trt. 2 (SOA 4)
2,4-D AMINE 2 qt/a
PRE Sprayed 5/6/14

June 30, 2014
Trt. 6 (SOA 4)
2,4-D AMINE 2 pt/a + Induce NIS 0.25% v/v
POST I (1-2” weeds) sprayed 5/27/14

June 3, 2014

June 16, 2014
Trt. 6 (SOA 4)
2,4-D AMINE 2 pt/a + Induce NIS 0.25% v/v
POST I (1-2” weeds) sprayed 5/27/14

June 30, 2014
Trt. 9 (SOA 4)
2,4-D AMINE 2 pt/a + Induce NIS 0.25% v/v
POST II (3-4” weeds) sprayed 6/6/14
Trt. 9 (SOA 4)
2,4-D AMINE 2 pt/a + Induce NIS 0.25% v/v
POST II (3-4” weeds) sprayed 6/6/14

June 30, 2014
Trt. 12 (SOA 4)
2,4-D AMINE + Induce NIS 0.25% v/v
POST III (5-6” weeds) sprayed 6/16/14
Trt. 12 (SOA 4)  
2,4-D AMINE + Induce NIS 0.25% v/v  
POST III (5-6” weeds) sprayed 6/16/14  

June 30, 2014
Trt. 3 (SOA 27)
CALLISTO 6 oz/a
PRE Sprayed 5/6/14

June 3, 2014

June 16, 2014
Trt. 3 (SOA 27)
CALLISTO 6 oz/a
PRE Sprayed 5/6/14

June 30, 2014
Trt. 7 (SOA 27)
CALLISTO 3 oz/a + COC 1% v/v +
N-PAK AMS 3.3 gal/100 gal
Post I(1-2” weeds) sprayed 5/27/14

June 3, 2014

June 16, 2014
Trt. 7 (SOA 27)
CALLISTO 3 oz/a + COC 1% v/v +
N-PAK AMS 3.3 gal/100 gal
Post I(1-2” weeds) sprayed 5/27/14

June 30, 2014
Trt. 10 (SOA 27)
CALLISTO 3 oz/a + COC 1% v/v +
N-PAK AMS 3.3 gal/100 gal
Post II(3-4” weeds) sprayed 6/6/14

June 9, 2014

June 16, 2014
Trt. 10 (SOA 27)
CALLISTO 3 oz/a + COC 1% v/v +
N-PAK AMS 3.3 gal/100 gal
Post II (3-4” weeds) sprayed 6/6/14

June 30, 2014
Trt. 13 (SOA 27)
CALLISTO 3 oz/a + COC 1% v/v +
N-PAK AMS 3.3 gal/100 gal
Post III (5-6” weeds) sprayed 6/16/14

June 16, 2014

June 23, 2014
Trt. 13 (SOA 27)  
CALLISTO 3 oz/a + COC 1% v/v +  
N-PAK AMS 3.3 gal/100 gal  
Post III(5-6” weeds) sprayed 6/16/14
Trt. 4 (SOA 27)
BALANCE PRO 2.5 oz/a
PRE Sprayed 5/6/14

June 3, 2014

June 16, 2014
Trt. 4 (SOA 27)  
BALANCE PRO 2.5 oz/a  
PRE Sprayed 5/6/14

June 30, 2014