# 2018 Selective Broadleaf Control Trials near Richmond (including 2019 Assessment)

*Introduction*

One of the objectives of roadside vegetation management is selective control of broadleaf weeds, without damaging desirable grasses, such as tall fescue. Other objectives include brush control and grass growth regulation. A number of herbicides are currently available for use by roadside managers. Therefore, individual herbicides and product combinations were evaluated for control of various weed species.

*Materials and Methods*

A field trial was established June 29, 2018 on an area mowed periodically, following the first mowing of the season, along I-75 near Richmond, KY. The trial had 14 treatments with 3 replications arranged in a randomized complete block design with 7 ft by 20 ft plots. Applications were made using a carrier volume of 25 gallons per acre. The area consisted of a mix of broadleaf weeds and some desirable grasses. Most plots contained Canada thistle (9 inches tall) as well as johnsongrass (20 inches tall). Some plots contained flowering buckhorn plantain (6 inch rosettes and 15 inch seedheads) as well as prickly lettuce (15 inches tall). A patch of hemp dogbane (15 inches tall) was also present.

Herbicide treatments and active ingredients are listed in Table 1. Many treatments were applied at the maximum annual rate which included Milestone (Treatment 1) and Opensight (Treatment 2). Perspective (Treatment 3) and Streamline (Treatment 4) were both applied at the maximum selective rate although both can be applied at higher rates for bareground. However, even the selective rate can result in turf yellowing and reduced growth. In some cases the reduced growth may be desirable. Method (Treatments 6, 7, and 8) is a new product with only the aminocyclopyrachlor component of Perspective and Streamline. Method at 7.2 fl oz per acre has the equivalent amount of aminocyclopyrachlor (1.8 oz ai/A) which is present in 4.5 oz per acre of either Perspective or Streamline. The labeling for Method indicates good plantain and brush control when applied from 10 to 18 fl oz per acre. Combinations of Milestone or Method + Plateau (Treatments 11 and 12) may provide grass growth reduction, as well as weed control. A higher rate of Method + Plateau (Treatment 13) has been recommended for grass growth regulation plus brush control behind guardrails.

Treatments were assessed 31 days after treatment (DAT) (7/30/2018), 68 DAT (9/5/2018), and 306 DAT (5/1/2019). Data were analyzed using ARM research management software (GDM Solutions, Inc.) and treatment means were compared using Fisher's LSD at $p = 0.05$.

*Results and Discussion*

Initial control of a range of broadleaf weeds was observed (68 to 92%) 31 DAT (Table 2) for most treatments. The least amount of control (63 to 65%) was with the two lowest rates of

Method (Treatments 6 and 7). The greatest degree of grass damage (43 to 57%) was with the combinations of Plateau (Treatments 11, 12, and 13) and Streamline (Treatment 4). Some treatments displayed little to no grass damage which included Milestone (Treatment 1), Opensight (Treatment 2), Pyresta + ProClipse (Treatment 5), low rate of Method (Treatment 6), Overdrive + Vastlan (Treatment 9), and Freelexx + Vastlan (Treatment 10). The best control of Canada thistle observed at 31 DAT was with the high rate of Method (Treatment 8) and the combinations with Plateau (Treatments 11, 12, and 13). The highest level of johnsongrass control was achieved with the high rate of Method (Treatment 8) and the combinations with Plateau (Treatments 11, 12, and 13).

By the second evaluation timing 68 DAT the site was overtaken by giant foxtail. Johnsongrass was also present in most plots (Table 2). The treatments with the least amount of foxtail cover were the mid-rate of Method (Treatment 7) and the combinations with Plateau (Treatments 11, 12, and 13). In future trials plot flags should be temporarily removed so that the area can be on the same mowing schedule to evaluate the broadleaf weed control as under the standard mowing regime of three times per year.

In the spring the trial area was dominated by shepherd's purse (*Capsella bursa-pastoris*) which was senescing by the assessment date (306 DAT) (Table 2). The trial area contained a good stand of Canada thistle within many of the plots in 2018 at time of application but in 2019 the visual estimation of the amount of Canada thistle was quite variable (coefficient of variation: 86%). Regardless of the variability observed all herbicide treatments had fewer Canada thistle plants than the nontreated control.

***Table 1. Herbicide Treatments, Active Ingredients and Application Rates.***

| Trt. No. | Product Name | Rate | Rate Unit | Active Ingredient(s) | ai Rate (per acre) |
|---|---|---|---|---|---|
| 1 | Milestone VM | 7 | FL OZ/A | aminopyralid | 1.8 OZ AE/A |
| 2 | Opensight | 3.3 | OZ/A | aminopyralid + metsulfuron | 1.7 OZ AE + 0.3 OZ/A |
| 3 | Perspective | 4.5 | OZ/A | aminocyclopyrachlor + chlorsulfuron | 1.8 OZ + 0.7 OZ/A |
| 4 | Streamline | 4.5 | OZ/A | aminocyclopyrachlor + metsulfuron | 1.8 OZ + 0.6 OZ/A |
| 5 | Pyresta | 24 | FL OZ/A | 2,4-D + pyraflufen-ethyl | 0.66 LB AE + 0.05 OZ/A |
| | Proclipse | 2 | LB/A | prodiamine | 1.3 LB/A |
| 6 | Method | 4 | FL OZ/A | aminocyclopyrachlor | 1 OZ AE/A |
| 7 | Method | 6 | FL OZ/A | aminocyclopyrachlor | 1.5 OZ AE/A |
| 8 | Method | 12 | FL OZ/A | aminocyclopyrachlor | 3 OZ AE/A |
| 9 | Overdrive | 5 | OZ/A | diflufenzopyr + dicamba | 1 OZ AE + 2.5 OZ AE/A |
| | Vastlan | 16 | FL OZ/A | triclopyr | 8 OZ AE/A |
| 10 | Freelexx | 48 | FL OZ/A | 2,4-D | 22.8 OZ AE/A |
| | Vastlan | 32 | FL OZ/A | triclopyr | 16 OZ AE/A |
| 11 | Milestone VM | 6 | FL OZ/A | aminopyralid | 3 OZ AE/A |
| | Plateau | 3 | FL OZ/A | imazapic | 0.75 OZ AE/A |
| 12 | Method | 6 | FL OZ/A | aminocyclopyrachlor | 1.5 OZ AE/A |
| | Plateau | 3 | FL OZ/A | imazapic | 0.75 OZ AE/A |
| 13 | Method | 12 | FL OZ/A | aminocyclopyrachlor | 3 OZ AE/A |
| | Plateau | 3 | FL OZ/A | imazapic | 0.75 OZ AE/A |
| 14 | Nontreated Check | | | | |

All herbicide treatments contained the adjuvant, Activator 90 at 0.25% v/v.

***Table 2. Herbicide Treatments, Application Rates, and Evaluation Data.2***

| | | | | Broadleaf Control (%) | Grass Damage (%) | Johnsongrass Control (%) | Canada Thistle Control (%) | Giant Foxtail Cover (%) | Johnsongrass Cover (%) | Canada Thistle Amount (0-10)[3] |
|---|---|---|---|---|---|---|---|---|---|---|
| **Trt. No.** | **Product Name** | **Rate** | **Rate Unit** | **31 DAT (July 30, 2018)** | | | | **68 DAT (Sept 5, 2018)** | | **306 DAT (May 1, 2019)** |
| 1 | Milestone VM | 7 | FL OZ/A | 72 abc[1] | 13 cde | 25 defg | 88 ab | 85 a | 9 | 1.3 bc |
| 2 | Opensight | 3.3 | OZ/A | 70 abc | 3 de | 35 def | 92 a | 75 ab | 18 | 1.3 bc |
| 3 | Perspective | 4.5 | OZ/A | 92 a | 37 b | 35 def | 90 a | 52 abc | 13 | 0.5 c |
| 4 | Streamline | 4.5 | OZ/A | 92 a | 43 ab | 40 cde | 92 a | 67 abc | 17 | 0.3 c |
| 5 | Pyresta<br>Proclipse | 24<br>2 | FL OZ/A<br>LB/A | 68 abc | 3 de | 10 fg | 65 b | 50 abc | 22 | 1.8 bc |
| 6 | Method | 4 | FL OZ/A | 63 c | 15 cde | 30 def | 72 ab | 88 a | 10 | 0.3 c |
| 7 | Method | 6 | FL OZ/A | 65 bc | 18 cd | 47 bcd | 65 b | 35 bc | 33 | 2.3 bc |
| 8 | Method | 12 | FL OZ/A | 90 a | 28 bc | 68 ab | 93 a | 47 abc | 27 | 0.3 c |
| 9 | Overdrive<br>Vastlan | 5<br>16 | OZ/A<br>FL OZ/A | 73 abc | 15 cde | 20 efg | 77 ab | 72 ab | 20 | 0.8 bc |
| 10 | Freelexx<br>Vastlan | 48<br>32 | FL OZ/A<br>FL OZ/A | 83 abc | 0 e | 15 efg | 80 ab | 63 abc | 30 | 0.7 bc |
| 11 | Milestone VM<br>Plateau | 6<br>3 | FL OZ/A<br>FL OZ/A | 72 abc | 45 ab | 65 abc | 70 ab | 27 c | 37 | 2.7 b |
| 12 | Method<br>Plateau | 6<br>3 | FL OZ/A<br>FL OZ/A | 73 abc | 43 ab | 80 a | 73 ab | 40 bc | 17 | 1.7 bc |
| 13 | Method<br>Plateau | 12<br>3 | FL OZ/A<br>FL OZ/A | 88 ab | 57 a | 80 a | 91 a | 40 bc | 12 | 1.0 bc |
| 14 | Nontreated Check | | | 0 d | 0 e | 0 g | 0 c | 48 abc | 35 | 5.2 a |

All herbicide treatments contained the adjuvant, Activator 90 at 0.25% v/v.

[1] *Means within a column followed by the same letter are not different according to Fisher's LSD at P < 0.05.*

[2] *Treatments applied June 29, 2018.*

[3] *Visual assessment of coverage and volume of biomass*