

# Research Updates

Jon Johnson & Dave Despot

2015 Roadside Vegetation Management Training Seminar

Ramada Inn, State College

January 22, 2015

# Brush Control Efforts

- Comparing triclopyr formulations
- Investigating 2,4-D for brush control
- Cut stubble treatments

# Triclopyr Comparison Demo 10-0



# Comparing Triclopyr Formulations

August 28, 2014

| product           | Rate (oz/ac) |
|-------------------|--------------|
| Garlon 3A         | 64           |
| Triclopyr choline | 48           |

# Triclopyr Comparison - Targets



# Triclopyr Comparison - Targets



# Triclopyr choline

Compatibility  
issues?



# Triclopyr Comparison Poplar





# Materials & Methods

- Treated Poplar (Ebensburg, PA)
- Applied August 29, 2014
- Triclopyr choline 4 lb a.i./gal
- 20 x 10 ft. plots, 4 reps
- 50 GPA
- NIS @ 0.25% v/v

# Comparing Triclopyr Formulations– 2014

| product           | Rate (oz/ac) |
|-------------------|--------------|
| untreated         | ----         |
| Garlon 3A         | 64           |
| Triclopyr choline | 48           |
| Triclopyr 3A      | 64           |

# 30 DAT, Triclopyr choline (48)



# 2,4-D for Brush Control + Triclopyr Comparison



# Materials & Methods

- Mill Hall, PA SR 220N
- Applied September 4, 2014
- Plot size 20 x 10 ft.
- 4 reps, RCBD
- 50 GPA
- NIS @ 0.25% v/v

| product           | rate (oz/ac) |
|-------------------|--------------|
| untreated         | ----         |
| PDT Blend         | 8            |
| DMA 4 IVM         | 96           |
| Escort XP         | 0.25         |
| PDT Blend         | 5.33         |
| DMA 4 IVM         | 96           |
| Escort XP         | 0.5          |
| DMA 4 IVM         | 96           |
| Garlon 3A         | 64           |
| DMA 4 IVM         | 96           |
| Escort XP         | 0.5          |
| Milestone VM      | 7            |
| DMA 4 IVM         | 96           |
| Escort XP         | 0.5          |
| Garlon 3A         | 64           |
| Triclopyr Choline | 48           |
| Triclopyr 3A      | 64           |

# Mixed Brush



# Cut Stubble - 2013





# Objective

- Evaluate the performance of a foliar application of Viewpoint and Streamline, two products that contain aminocyclopyrachlor, alone and in combination with other brush control herbicides on resprouting woody vegetation following mowing.

# Time of Treatment



# Species Present

- exotic shrub honeysuckle
- cherry
- black locust
- black walnut
- smooth sumac

# Materials and Methods

- Area cut winter 2012/2013
- Applied herbicide treatments May 30, 2013
- Added MSO at 1% v/v to all treatments
- RCBD, 4 reps, plots 20 x 30 ft.
- CO<sub>2</sub> sprayer with 6 ft. boom, (4) 8004 VS tips
- 50 GPA



Sept 19, 2013

5



Sept 19, 2013

| Product                          | Rate (oz/ac)    | LONXX Defoliation<br>9.19.2013 | LONXX Mortality<br>6.3.2014 |
|----------------------------------|-----------------|--------------------------------|-----------------------------|
| Streamline                       | 9.5             | 79 b                           | 53                          |
| Streamline                       | 11.5            | 83 b                           | 59                          |
| Streamline<br>Krenite S          | 9.5<br>128      | 79 b                           | 73                          |
| Streamline<br>Krenite S          | 11.5<br>128     | 86 b                           | 68                          |
| Viewpoint                        | 13              | 88 b                           | 58                          |
| Viewpoint                        | 16.5            | 85 b                           | 60                          |
| Viewpoint<br>Streamline          | 9.5<br>6        | 84 b                           | 64                          |
| Tordon K<br>Arsenal<br>Milestone | 64<br>16<br>7   | 73 b                           | 27                          |
| Tordon K<br>Garlon 4             | 64<br>128       | 95 b                           | 87                          |
| Garlon 4<br>2,4-D<br>Escort XP   | 64<br>64<br>0.5 | 88 b                           | 59                          |

# Streamline (9.5) + Krenite S (128)



Sept 19, 2013



# Tordon K (64) + Garlon 4 (128)



Sept 19, 2013

untreated



# Some plots had delayed regrowth



# Streamline (9.5) + Krenite S (128)



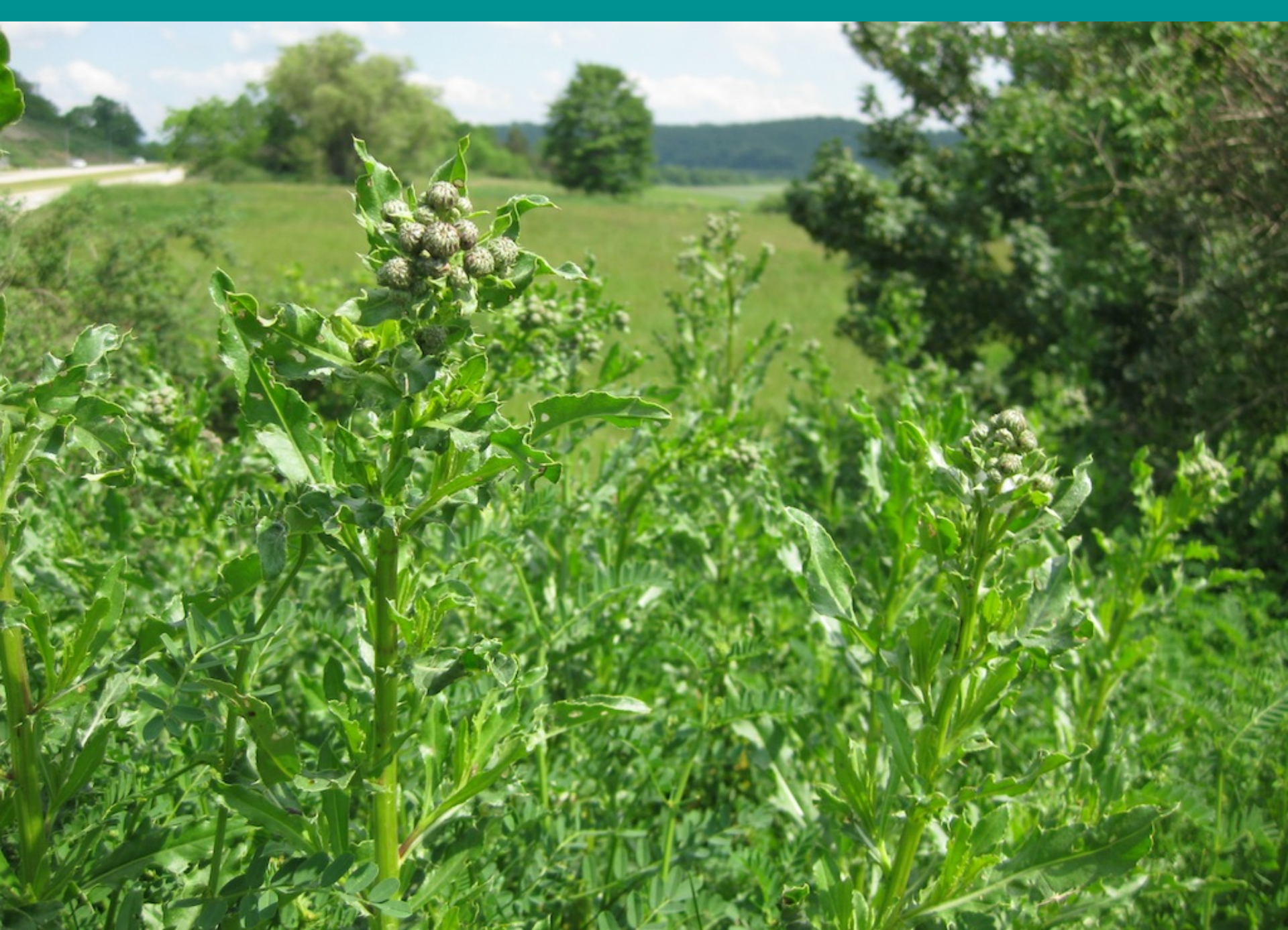
# Conclusions

- Tordon K (64 oz) + Garlon 4 (128 oz) provided effective control (87%).
- Restricted use product.
- Adding Krenite to Streamline improved control using foliar treatment.
- Even Streamline at 11.5 oz (9.1 oz MAT + 2.4 oz Escort) did not offer satisfactory control.

**Conversion of Canada Thistle –  
Infested Crownvetch Groundcover  
to Fine Fescue Turf: a seeding  
timing experiment**

# Objective

**To determine the effectiveness of various herbicide treatments to control crownvetch and Canada thistle while defining the best timing for turfgrass seeding after treatment.**





# Working in Mixed Groundcovers



# Previous Research Canada Thistle Control in Turf



Rt. 30 near the Mountville Exit

## Previous Research Canada Thistle Control in Turf, District 8-0 and 10-0

| <b>Treatments Route 30</b>                        | % Turf Cover<br>5-22-12 | % Turf Cover<br>10-11-12 | % Thistle cover<br>5-22-12 | % Thistle Cover<br>10-11-12 |
|---|-------------------------|--------------------------|----------------------------|-----------------------------|
| Mow Spring and Fall                               | 70                      | 87                       | 1                          | 1                           |
| Mow Spring, Milestone Fall                        | 61                      | 82                       | 0                          | 0                           |
| Mow Spring, Milestone + Overdrive Fall            | 70                      | 92                       | 0                          | 0                           |
| Mow Spring, Perspective + Overdrive Fall          | 66                      | 92                       | 0                          | 0                           |
| Chemical Mow Spring, Milestone + Overdrive Fall   | 61                      | 89                       | 0                          | 0                           |
| Chemical Mow Spring, Perspective + Overdrive Fall | 67                      | 91                       | 0                          | 0                           |

| <b>Treatments Indiana</b>                         | % Turf Cover<br>5-24-12 | % Turf Cover<br>9-20-12 | % Thistle cover<br>5-24-12 | % Thistle Cover<br>9-20-12 |
|---|-------------------------|-------------------------|----------------------------|----------------------------|
| Mow Spring and Fall                               | 73                      | 48                      | 18                         | 40                         |
| Mow Spring, Milestone Fall                        | 90                      | 95                      | 0                          | 3                          |
| Mow Spring, Milestone + Overdrive Fall            | 87                      | 98                      | 0                          | 1                          |
| Mow Spring, Perspective + Overdrive Fall          | 88                      | 98                      | 0                          | 1                          |
| Chemical Mow Spring, Milestone + Overdrive Fall   | 80                      | 99                      | 0                          | 0.3                        |
| Chemical Mow Spring, Perspective + Overdrive Fall | 83                      | 99                      | 0                          | 0.3                        |

# Lessons Learned

- Fall herbicide treatments effective.
- Turf cover helped to reduce Canada thistle population.
- Mowing two times per year effective where turf present.

# Mowing vs Herbicide



# Next Step...

## Canada Thistle Control in Crownvetch



# 2012 Canada Thistle Conversion Treatments

## Fall Seed

Milestone VM (7), Fall Seed

Roundup Pro (104), Transline (8), Fall Seed

Custom Blend (8), Fall Seed

Custom Blend (4), Garlon 3A (64), Fall Seed

## Spring 2013 Seed

Milestone VM (7), Spring 2013 Seed

Roundup Pro (104), Transline (8), Spring 2013 Seed

Custom Blend (8), Spring 2013 Seed

Custom Blend (4), Garlon 3A (64), Spring 2013 Seed

No 2012 herbicide app., No 2012 or 2013 seeding

| product          | oz/ac | active       | g a.i./ha |
|------------------|-------|--------------|-----------|
| Milestone VM     | 7     | aminopyralid | 123.4     |
| Roundup Pro Conc | 104   | glyphosate   | 3365      |
| Transline        | 8     | clopyralid   | 210.3     |
| Custom Blend     |       |              |           |
| <i>MAT28</i>     | 7.67  | ACP          | 269.5     |
| <i>Escort XP</i> | 0.33  | metsulfuron  | 14        |
| Custom Blend     |       |              |           |
| <i>MAT28</i>     | 3.84  | ACP          | 134.7     |
| <i>Escort XP</i> | 0.16  | metsulfuron  | 7         |
| Garlon 3A        | 64    | triclopyr    | 1683      |

ACP = aminocyclopyrachlor; MAT28 = 50% ACP



# Timeline

- Mowed all plots, June 2012
- Applied herbicide treatments, **September 5** and 7, 2012
- Seeded Formula L, **Sept 26** and Oct 5, 2012 or April 11 and 16, 2013 (soil prep done immediately prior to seeding)
- Applied broadleaf herbicide (Triplet LO) to all plots except control, June 2013
- Mowed all plots, October 2013, June-July 2014, and October 2014.

# Mowed all plots, June 2012



# Applied herbicide treatments, September 5 and 7, 2012



Seeded Formula L, Sept 26 and Oct 5, 2012 or April 11 and 16, 2013  
(soil prep done immediately prior to seeding)



Applied broadleaf herbicide to all plots  
except the control plot, June, 2013



Mowed all plots October 2013,  
June-July 2014, October 2014



# Canada Thistle Stems per Square Meter Juniata County Site

| Treatment  | 8/28/2012 | 6/18/13 | 09/23/14 |
|--|-----------|---------|----------|
| Fall Seed  | 40        | 18 bc   | 3 a      |
| Milestone VM (7), Fall Seed                        | 40        | 2 ab    | 4 a      |
| Roundup Pro (104), Transline (8), Fall Seed        | 33        | 2 ab    | 2 a      |
| Custom Blend (8), Fall Seed                        | 43        | 0 a     | 1 a      |
| Custom Blend (4), Fall Seed                        | 36        | 0 a     | 7 a      |
| Spring 2013 Seed                                   | 32        | 28 c    | 14 abc   |
| Milestone VM (7), Spring 2013 Seed                 | 45        | 1 a     | 6 a      |
| Roundup Pro (104), Transline (8), Spring 2013 Seed | 60        | 15 abc  | 26 c     |
| Custom Blend (8), Spring 2013 Seed                 | 45        | 0 a     | 4 a      |
| Custom Blend (4), Spring 2013 Seed                 | 41        | 1 a     | 8 ab     |
| No 2012 herbicide app., No 2012 or 2013 seeding    | 41        | 23 c    | 25 bc    |

# % Cover by Desirable Turf Juniata County Site

| Treatment  | 6/18/2013 | 9/23/2014 |
|--|-----------|-----------|
| Fall Seed  | 35 ab     | 69 b      |
| Milestone VM (7), Fall Seed                        | 50 ab     | 61 b      |
| Roundup Pro (104), Transline (8), Fall Seed        | 70 b      | 72 b      |
| Custom Blend (8), Fall Seed                        | 54 ab     | 67 b      |
| Custom Blend (4), Fall Seed                        | 57 b      | 68 b      |
| Spring 2013 Seed                                   | 25 ab     | 9 a       |
| Milestone VM (7), Spring 2013 Seed                 | 29 ab     | 16 a      |
| Roundup Pro (104), Transline (8), Spring 2013 Seed | 64 b      | 12 a      |
| Custom Blend (8), Spring 2013 Seed                 | 58 b      | 6 a       |
| Custom Blend (4), Spring 2013 Seed                 | 36 ab     | 16 a      |
| No 2012 herbicide app., No 2012 or 2013 seeding    | 0 a       | 0 a       |



# Disappearing Fine Fescue, Spring 2013 Seeded, Juniata County Site



June 20, 2013



October 24, 2013

10.24.2013 13:56

10.24.2013 13:57

Viewer Discretion is Advised - VC



# Canada Thistle Stems per Square Meter Old Fort Site

| Treatment  | 8/27/2012 | 6/12/2013 | 9/17/2014 |
|--|-----------|-----------|-----------|
| Fall Seed  | 46        | 28 c      | 5 ab      |
| Milestone VM (7), Fall Seed                        | 58        | 7 ab      | 5 ab      |
| Roundup Pro (104), Transline (8), Fall Seed        | 41        | 8 ab      | 5 ab      |
| Custom Blend (8), Fall Seed                        | 48        | 0 a       | 3 ab      |
| Custom Blend (4), Fall Seed                        | 43        | 0 a       | 1 ab      |
| Spring 2013 Seed                                   | 49        | 39 c      | 3 ab      |
| Milestone VM (7), Spring 2013 Seed                 | 49        | 6 ab      | 0 a       |
| Roundup Pro (104), Transline (8), Spring 2013 Seed | 47        | 14 b      | 2 ab      |
| Custom Blend (8), Spring 2013 Seed                 | 47        | 0 a       | 1 ab      |
| Custom Blend (4), Spring 2013 Seed                 | 44        | 3 ab      | 2 ab      |
| No 2012 herbicide app., No 2012 or 2013 seeding    | 49        | 28 c      | 8 b       |

# % Cover by Desirable Turf Old Fort Site

| Treatment  | 6/12/2013 | 9/17/2014 |
|--|-----------|-----------|
| Fall Seed  | 26 abc    | 66 bc     |
| Milestone VM (7), Fall Seed                        | 46 bc     | 53 bc     |
| Roundup Pro (104), Transline (8), Fall Seed        | 40 abc    | 65 bc     |
| Custom Blend (8), Fall Seed                        | 10 ab     | 21 ab     |
| Custom Blend (4), Fall Seed                        | 35 abc    | 46 bc     |
| Spring 2013 Seed                                   | 16 abc    | 31 ab     |
| Milestone VM (7), Spring 2013 Seed                 | 56 c      | 39 abc    |
| Roundup Pro (104), Transline (8), Spring 2013 Seed | 54 c      | 80 c      |
| Custom Blend (8), Spring 2013 Seed                 | 49 bc     | 66 bc     |
| Custom Blend (4), Spring 2013 Seed                 | 56 c      | 81 c      |
| No 2012 herbicide app., No 2012 or 2013 seeding    | 0 a       | 0 a       |

# Thistle Control Program

- What have we learned?
  - A program containing a combination of select herbicides, mowing, and establishing or utilizing existing turf cover seems to work
  - Formula L germination did not appear to be significantly inhibited by Custom Blend (aminocyclopyrachlor + metsulfuron) beyond one month after application.

# Thistle Control Program

Where do we go from here

– Establish another experiment that greater isolates treatments geographically from one another to:

1. Ensure no influence from treatments with adjoining plot boundaries.
2. Encompass the entire Canada thistle population, so entire root system is treated.



06/08/2010