Management of a new grass weed problem, roughstalk bluegrass, in winter wheat

(17-08-05-AS)

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Roughstalk bluegrass issues in winter wheat
Roughstalk bluegrass

*Poa trivialis*

- Cool-season grass weed
  - Traditionally a problem in turfgrass
  - Also an issue for hay growers
  - Showing up more in wheat
- Characterized as a perennial – aboveground stolons
  - We believe in wheat it is spread by seed
Roughstalk bluegrass characteristics

- Broad-tapering leaves
- Long pointed ligules
- Roughish leaf sheaths
- Slender rough stems
- Loose green panicle
- Often 1 to 3 feet tall
Problem statement

- Lack of knowledge of the biology of roughstalk bluegrass in agricultural systems, more specifically in winter wheat
- Little information available on how to manage roughstalk bluegrass in winter wheat
2018 Research Questions

1) When does roughstalk bluegrass emerge in winter wheat in Michigan?

2) What herbicides and when is the best time to apply them to manage roughstalk bluegrass in winter wheat?
Site description

‘Sunburst’ soft red wheat

*Planted*: Sept. 28, 2017

1.8 million seeds/A

Weekly to biweekly emergence counts
Roughstalk bluegrass emergence counts (2017-2018)

- A majority of RSBG emerged in the fall
  - Prior to 1st week of November
- Less than 15% spring emergence
  - Emergence ceased after May 16
Herbicide application timings

Tillering

Stem extension

Heading

jointing

boot

Zidua

Osprey timing (1-6)

PowerFlex HL timing (1.3-6)

Axial XL timing (1.2-7.9)

Winter dormancy
Application timings

**PRE:** Sept. 29, 2017

**FALL:** Oct. 20, 2017

**EPOS:** April 26, 2018

**POST:** May 8, 2018
### Herbicide options and timings examined

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>SOA</th>
<th>Rate</th>
<th>Timings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zidua</td>
<td>15</td>
<td>1 &amp; 2 oz</td>
<td>PRE</td>
</tr>
<tr>
<td>Osprey</td>
<td>2</td>
<td>4.75 oz</td>
<td>Fall, EPOS, POST</td>
</tr>
<tr>
<td>PowerFlex HL</td>
<td>2/2</td>
<td>2 oz</td>
<td>Fall, EPOS, POST</td>
</tr>
<tr>
<td>Axial XL</td>
<td>1</td>
<td>16.4 fl oz</td>
<td>Fall, EPOS, POST</td>
</tr>
<tr>
<td>Olympus*</td>
<td>2</td>
<td>0.9 oz</td>
<td>Fall</td>
</tr>
</tbody>
</table>

Osprey, PowerFlex HL, and Axial XL were also tank-mixed with Huskie or Talinor for the POST timing.

*Not registered for use in MI.*
Roughstalk bluegrass control from PRE & Fall applications

Control (%)

- Zidua (1 oz)
- Zidua (2 oz)
- Osprey
- PowerFlex
- Axial XL
- Olympus

8-May

Abbreviations:
- a
- ab
- bc

bc
b
ab
a
ab
ab
Roughstalk bluegrass control from PRE & Fall applications

Control (%)

Zidua (1 oz)  Zidua (2 oz)  Osprey  PowerFlex  Axial XL  Olympus

- 8-May
- 5-Jun

- bc
- b
- B
- ab
- A
- a
- AB
- ab
- B
- ab
- AB
Roughstalk bluegrass control from spring applications – June 5

- Osprey
- PowerFlex
- Axial XL

Control (%)
Roughstalk bluegrass control from spring applications – June 5

Control (%)

- Osprey
- PowerFlex
- Axial XL

EPOS | POST

- Osprey - a
- PowerFlex - c
- Axial XL - a

Legend:
- A
- B
- C
- D
Roughstalk bluegrass control comparison with POST tank-mixtures

The addition of Huskie or Talinor to POST grass herbicides did not appear to affect roughstalk bluegrass control.
Roughstalk bluegrass control effect on winter wheat yield

Yield (bu/A)

- **FALL**
  - Osprey: ab
  - PowerFlex: a
  - Axial XL: a

- **EPOS**
  - Osprey: a
  - PowerFlex: ab
  - Axial XL: a

- **POST**
  - Osprey: ab
  - PowerFlex: c
  - Axial XL: b

Legend:
- Osprey
- PowerFlex
- Axial XL

Untreated
Summary

- Roughstalk bluegrass is primarily a fall emerger
  - Some spring emergers can be missed if a fall herbicide applications are used
- Fall applications reduced RSBG populations, but were not 100% – no reductions in yield
- Early spring applications of Osprey and Axial XL resulted in the best RSBG control
- Later spring applications resulted in poorest control, especially with PowerFlex
  - POST applications of PowerFlex provided poor control that resulted in significant RSBG competition and yield reductions similar to the untreated control
- RSBG was very competitive and resulted in over 50% yield loss if not effectively controlled
Recommendations

- Roughstalk bluegrass needs to be controlled or significant yield loss can occur.
- Early spring applications of Osprey (4.75 oz/A), or Axial XL (16.4 fl oz/A) applied to 1-2” roughstalk bluegrass provides the greatest control.
- However, if growers use fall applications they will be able to reduce RSBG populations to limit wheat yield loss.
- Later spring applications should be avoided due to poorer control and yield reductions from RSBG competition.
Roughstalk bluegrass management in winter wheat - Year 2
(proposed research FY18-19)

- Determine the emergence pattern and time to flowering of roughstalk bluegrass in winter wheat – correlate with GDD
- Evaluate the effect of herbicide application timing (fall vs. spring) and herbicide selection on RSBG control
- Provide management recommendations for RSBG to control
Impacts

- Develop recommendations on the most effective roughstalk bluegrass management strategies in winter wheat.

- Resulting data will be presented in fact sheets, added to the MSU Weed Control Guide for Field Crops (E-434), presented at extension meetings, and at www.MSUweeds.com.
Acknowledgements