Poa trivialis: Where Does It Come From and How to Control It

Zac Reicher, Ph.D.
http://turf.unl.edu/
http://turf.unl.edu/
**Poa trivialis**

- Weak perennial
- Outgrows other cool-season grasses in spring and fall
- Extremely sensitive to heat, drought, dollar spot, (and who knows what else) in mid- to late-summer
- Goes dormant in August
- Re-grows in September from crowns and stolons
Where does it come from?

- Overseeded in Southern greens
- Has gained popularity in last 15 years
- Contaminant in seed fields
- Major contaminant in northern golf course fairways, athletic fields, lawns seeded or overseeded in last 10 years
- Grows “wild” in pastures, fence rows, etc. as a very early contaminant
- Once established, spread through aerification
Seed contamination - 1998

1/3 of CBG seed lots contained Poa trivialis
Seed contamination- 1998

<table>
<thead>
<tr>
<th>Test sample size</th>
<th>2.5 gram</th>
<th>10 gram</th>
<th>50 gram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentgrass samples tested</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>% containing <em>trivialis</em></td>
<td>3</td>
<td>6</td>
<td>30</td>
</tr>
</tbody>
</table>

Matt Levy, 1998 Green Section Record
Purdue seed contamination survey - 2008
Seed contamination - 2008

8 of 72 (11%) seed lots contained *Poa trivialis*

- 3 seedlots = 9 Poa triv seeds/lb
- 3 seedlots = 18 Poa triv seeds/lb
- 1 seedlot = 27 Poa triv seeds/lb
- 1 seedlot = >45 Poa triv seeds/lb

7/8 seedlots were certified blue tag
Keeping it out

Control in seedbed

- Velocity 17.6WSP can be applied at 1 WAE with good safety on bent and good control on *Poa triv*
- Certainty safety is highest at 4WAE depending on rate
- Multiple apps will improve control
- Both will control seedling *Poa annua*

Safety of Velocity 17.6SG when applied over newly-seeded L93 creeping bentgrass. Regardless of rate or timing, Velocity had no effect on cover by 8 weeks after emergence (WAE) (Purdue 2007).
Control of *Poa trivialis* by Velocity 17.6SG when applied over newly-seeded *Poa trivialis* and rated 8WAE. Though multiple applications are always more effective on *Poa trivialis*, single applications at 1-2 WAE were effective (Purdue 2007).
Effect of two applications of Velocity 17.6 SG or Certainty applied to separate stands of seedling *Poa trivialis* or creeping bentgrass in fall 2008 at various weeks after emergence (WAE). Data presented were collected eight weeks after emergence.
Controlling established *Poa trivialis*

- Certainty, Velocity
- Start apps at temps>70F
- Most aggressive:
  - Certainty 0.5 oz/A * 3 apps
  - Velocity 17.6WSP 4.5 or 6.0 oz/A * 4 apps
- Less aggressive
  - Certainty 0.25 oz/A * 2 or 3 apps
- Variability from location to location
- Temps>85F improves control
- Some phyto expected, low N, Fe will help
## Effect of Certainty or Velocity applied every two weeks on *Poa trivialis* control

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Apps</th>
<th>IL</th>
<th>IN</th>
<th>SD Sun</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>oz/A</td>
<td></td>
<td>------</td>
<td>-----</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>--------</td>
</tr>
<tr>
<td>Certainty 75WDG</td>
<td>0.25</td>
<td>2</td>
<td>-9 e</td>
<td>3 c</td>
<td>18 b</td>
</tr>
<tr>
<td>Certainty 75WDG</td>
<td>0.50</td>
<td>2</td>
<td>26 d</td>
<td>8 c</td>
<td>64 ab</td>
</tr>
<tr>
<td>Certainty 75WDG</td>
<td>0.25</td>
<td>3</td>
<td>32 cd</td>
<td>12 c</td>
<td>41 b</td>
</tr>
<tr>
<td>Certainty 75WDG</td>
<td>0.50</td>
<td>3</td>
<td>90 a</td>
<td>42 bc</td>
<td>86 a</td>
</tr>
<tr>
<td>Velocity 80SP</td>
<td>0.65</td>
<td>4</td>
<td>52 bc</td>
<td>63 ab</td>
<td>23 b</td>
</tr>
<tr>
<td>Velocity 80SP</td>
<td>0.98</td>
<td>4</td>
<td>77 ab</td>
<td>88 a</td>
<td>18 b</td>
</tr>
<tr>
<td>Velocity 80SP</td>
<td>1.3</td>
<td>4</td>
<td>62 abc</td>
<td>96 a</td>
<td>23 b</td>
</tr>
</tbody>
</table>

No differences in South Dakota (shade) and in Wisconsin

*Golf Course Management, October 2007*
Long-term conversion study

• Stand: 90% triv/10% CBG fairway
• 7 herbicide treatments:
  – Certainty
    • 0.25 oz/A * 2 apps
    • 0.50 oz/A * 2 apps
    • 0.25 oz/A * 3 apps
    • 0.50 oz/A * 3 apps
  – Velocity 17WSP
    • 3.0 oz/A * 4 apps
    • 4.5 oz/A * 4 apps
    • 6.0 oz/A * 4 apps
• ½ of plots were seeded w/L93 after last application
• Repeated for 3 years on separate areas
Long-term conversion study

• Applications started in June
• Last application on Aug 1
• Aerified/seeded on Aug 15
• Recorded data through 46 weeks (until start of next year’s apps)
• Long-term control was largely affected by short-term herbicide efficacy
• Short-term control was largely affected by weather
Maximum and minimum air temperatures in West Lafayette, IN, in 2006 – 2008.
*Poa trivialis* and creeping bentgrass cover after Certainty or Velocity applications rated at 46 WAT (weeks after final treatment) in 2006. Means are averaged over two seed treatments and three replications. Lower case letters are used to compare creeping bentgrass cover while upper case letter are used to compare roughstalk bluegrass cover. Bars with the same letter and case within the same rating date are not significantly different (P <0.05). Between 1 June and 1 Sep, there were a total of 21 days with max temps > 85F and max temps remained > 85F for 3 consecutive days on 4 occasions.
*Poa trivialis* and creeping bentgrass cover after Certainty or Velocity applications rated at 46 WAT (weeks after final treatment) in 2007. Means are averaged over two seed treatments and three replications. Lower case letters are used to compare creeping bentgrass cover while upper case letter are used to compare roughstalk bluegrass cover. Bars with the same letter and case within the same rating date are not significantly different (P <0.05). Between 1 June and 1 Sep, there were a total of 28 days with max temps >85F and max temps remained >85F for 3 consecutive days on 5 occasions.
*Poa trivialis* and creeping bentgrass cover after Certainty or Velocity applications rated 46 WAT (weeks after final treatment) in 2008. Means are back-transformed and averaged over two seed treatments and three replications. Lower case letters are used to compare creeping bentgrass cover while upper case letter are used to compare roughstalk bluegrass cover. Bars with the same letter and case within the same rating date are not significantly different (P <0.05). Between 1 June and 1 Sep, there were a total of 7 days with max temps > 85F and max temps remained > 85F for 3 consecutive days on 1 occasion.
Control recommendations

- Buy good seed, test 50 grams if possible
- Early applications over new seedlings to minimize future contamination (some seed contamination still exists)
- Avoid further contamination through sanitation when aerifying
- Apply starting in late May/June >75F
- Most aggressive:
  - Certainty 0.5 oz/A * 3 apps
  - Velocity 17.6 SP 4.5 or 6.0 oz/A * 4 apps
- Temps >85F improves control
- Reseeding after application improves competition and long-term control
- Reseeding interval after application
  - Certainty 2-3 weeks
  - Velocity 10 days
Keeping *Poa trivialis* alive

- Easier in cool, shaded areas
- Avoid drought stress
  - Difficult because extremely shallow rooted
- Preventative disease control – dollar spot, others?
Effect of season-long fungicide applications made every two weeks from May through September cover of fairway height *Poa trivialis* (exceeds label recommendations in most cases) (Purdue 2006).
Poa triv physiology

Can we take advantage of its natural growth patterns to get better control?
Mean % Cover Ratings

Date


%Cover (1-100)

L93
Laser
Pulsar

Mean % Cover Ratings