Annual Bluegrass Biology

- Scientific name: *Poa annua*
- Winter annual
- Capable of surviving close mowing, frequent irrigation, aeration, fertilization, etc.
- Perennial biotypes exist, especially in greens

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**Poa annua** biology

- Seed bank:
  - 110 viable seeds/in² greens
  - 70 viable seeds/in² fairways
  - 80% of seed in greens germinates immediately
  - Germination peaks in early Oct at ~70°F average air temps

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Annual bluegrass Biology

- *Poa annua* germinates in late summer to early fall at soil temperatures around 70°F.
- A second germination flush may occur in mid- to late-winter.

Cultural Control Strategies

- Prevention/Exclusion

Cultural Control Strategies

- Irrigation
- N rate
- N timing
- Aerification timing
Herbicides will cause you problems if you intend to establish (seed, spring, sod) turf in the future. Know the restrictions before you proceed!

Poa annua control in cool-season turf?

**Prograss (ethofumesate)**
- Most effective when applied in fall as two sequential applications spaced three to four weeks apart.
- Rate varies by species:
  - Kentucky bluegrass rate is 0.5 gallon/acre
  - Tall fescue rate is 0.5-1.0 gallon/acre
  - Perennial ryegrass rate is 0.66-1.33 gallon/acre
- Inconsistent control

**Annual bluegrass control in cool-season turf**
- Options for control
  - Ethofumesate (Prograss)
    - Two sequential fall applications spaced three to four weeks apart. A spring application of Prograss may also improve control when applied following fall applications. Certain Kentucky bluegrass cultivars may be injured by Prograss when applied at 0.5 gallon/acre as indicated on the label.
  - Tenacity (mesotrione)
  - Xonerate (amicarbazone)
  - Velocity (bispyraben-sodium) – Sod and Golf only

**Tenacity- Golf and Sod Labeled Uses**
- Bleacher
- PRE and POST broadcast applications (5-8 fl oz/A)
- Repeat POST applications at 2-3 weeks
  - + NIS
- New seedings (except fine fescues) 5-8 fl oz/A
  - Prior to or post-seeding
  - Avoid newly germinated seedlings
  - 16 fl oz/A per year max
  - (0.50 lbs ai/A) maximum

<table>
<thead>
<tr>
<th>Turf Species</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>K. bluegrass</td>
<td>5-8 fl oz/A</td>
</tr>
<tr>
<td>Tall fescue</td>
<td>(0.156-0.25 lb ai/A)</td>
</tr>
<tr>
<td>P. ryegrass</td>
<td>5 fl oz/A</td>
</tr>
<tr>
<td>Fine fescue</td>
<td>(0.156 lb ai/A)</td>
</tr>
</tbody>
</table>
Annual bluegrass control

- Three applications of Tenacity at 5 oz/A in the fall would be the best control strategy.
- Starting Tenacity applications in mid-September, end of September, or mid October all worked equally well.
- These results were obtained under the conditions of our experiment. Results will vary by location.
IN and IL research

• “Though acceptable control (> 80%) was obtained in some experiments, control was inconsistent or marginal depending on the location and year. Our current recommendations for fall-applied mesotrione would include three applications, starting in mid- to late September, at rates between 3 to 5 oz/A per application, and without follow-up applications in April.”

Weeds Controlled

- Barnyardgrass
- Bentgrass, creeping
- Buckhorn plantain
- Carpetweed
- Chickweed, common
- Chickweed, mouseear
- Clover, white
- Crabgrass, large
- Crabgrass, smooth
- Curly dock
- Dandelion, common
- Foxtail, yellow
- Galinsoga
- Goosegrass
- Ground ivy
- Healall
- Henbit
- Lamboquarter, common
- Nasturtium
- Nasturtium, yellow
- Oxalis
- Pigweed, smooth
- Purslane, common
- Shepherd’s purse
- Speedwell, purslane
- Smartweed
- Thistle, Canada
- Verbena
- Wild Carrot
- Wild Violet
- Windmillgrass

Xonerate (amicarbazone)

• New in 2012
• Xonerate at 2.0 to 4.0 oz/A at a 14- to 21-day interval for a maximum of two applications.
• Make applications of Xonerate in the spring when turf is actively growing and daily high temperatures do not exceed 85F.
• Do not apply in the summer or fall.

Tenacity

A broad-spectrum herbicide with selective post-emergence and pre-emergence control of broad-leaved and grass weeds

Effect of Amicarbazone Formulations on Annual Bluegrass Density. IN. 2011

- 0.13 lb ai/a
- Ami 4SC
- Ami 40G
- ARY-004 GR
- ARY-111 GR
- Untreated

0 = no annual bluegrass

Days after Application – Apr 21, 2011

Annual bluegrass cover (%)
What about *Poa annua* control in bermudagrass?

Annual bluegrass can be competitive as well as unattractive.

Two approaches

- New chemistry
- Old chemistry

Also known as ......

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Rate</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roundup</td>
<td>16 oz</td>
<td>Dormant (January)</td>
</tr>
<tr>
<td>Simazine</td>
<td>1 lb</td>
<td>December</td>
</tr>
<tr>
<td>Atrazine</td>
<td>1 lb</td>
<td>December</td>
</tr>
</tbody>
</table>

Waiting until March or April to control annual bluegrass is a bad idea. Once it is well-tillered control with products such as simazine declines. Other problems with late control includes failure to remove competition for the emerging warm season grass and the appearance of the annual bluegrass carcasses in the turf.
Annual Bluegrass

- Roundup is a cheap, effective herbicide in dormant bermudagrass.
- Roundup does not provide any preemergence control.
- It is possible to have a second flush of annual bluegrass if Roundup is used.
- Tank mixing a preemergence herbicide with Roundup prevents this problem.

Annual Bluegrass

- Simazine or atrazine at 1.0 quart/acre applied in November-December.
- Repeat in February if needed.

Annual Bluegrass Herbicides

- Sulfonylurea herbicides for annual bluegrass
  - Monument - trifloxysulfuron
  - Revolver - foramsulfuron
  - Tranxit – rimsulfuron
  - Katana – flazasulfuron
  - Certainty - sulfosulfuron
- Postemergence control and some preemergence control.
- Good safety at any time on bermudagrass.
Monument 0.33 oz/ac; applied 1-21-04; photo 3-10-04

Monument + Barricade applied 10-17-06, Photo 2-6-07

Untreated, Photo 2-6-07

TranXit 2.0 oz/ac; applied 1-21-04; photo 3-10-04

Revolver 8.8 fl oz/ac; applied 1-21-04; photo 3-10-04

Annual bluegrass carcasses from late application.
Sulfonylurea Herbicides

Revolver (8.8 to 17.4 fl oz/A)
Monument (0.35 to 0.53 oz/A)
Katana (3 fl oz/A)
TranXit (1 to 2 oz/A)
Certainty (1.25 to 2.0 oz/A)

Soil temperatures > 60 F
2% increase in control per degree

Enhanced activity with N fertilization

Field Results

- Annual bluegrass control greater with N fertility
  - 73, 59, 35 % increases for 0.25, 0.50, and 1.5 oz rates
  - Ammonium sulfate

- Control with 0.25 oz + N > 1.5 oz alone
  - 11 out of 12 dates across two years

What about Poa annua control in overseeded bermudagrass?

Poa annua in overseeded ryegrass

Barricade at 0.75 lb/ai a, applied 10 weeks before overseeding

Barricade 0.5 lb/ai a, applied 10 weeks before overseeding
What about using PGRs? Will that work?

PGRs
- Paclobutrazol (Trimmit)
- Flurprimidol (Cutless)
- Flurprimidol + trinexapac-ethyl (Legacy)
- All three (Muskateer)

Data on putting greens suggest these reduce annual bluegrass sometimes.

PGRs continued
- Regulates annual bluegrass more than creeping bentgrass allowing creeping bentgrass to fill in thin areas
- Won't likely work on athletic fields
  - Different species
  - Different cutting heights
  - Annual biotypes vs. perennial biotypes

What new experimental products are coming?

Methiozolin (MRC-01)
- Moghu Research Center in South Korea
- Registered in South Korea in 2010 and widely used
- Good safety on CB, TF, PR, KBG
- Good activity on Poa annua and P. trivialis
- PRE and POST activity — unsure how exactly it works?
- Current research at many locations
- Available in USA in 2015? Cost?
Research Objective - FWY

- Determine the efficacy of MRC-01 for annual bluegrass control in a mixed creeping bentgrass/annual bluegrass fairway as influenced by rate and application timing.

Methods

- Treatments (9):
  - MRC-01 treatments (4):
    - October 1 + November 1 @ 1.0 kg/ha at each application
    - October 1 + November 1 @ 2.0 kg/ha at each application
    - April 1 + May 1 @ 1.0 kg/ha at each application
    - April 1 + May 1 @ 2.0 kg/ha at each application
  - Velocity treatments (2)
    - October 1 + November 1 @ 6 oz/A at each application
    - April 1 + May 1 @ 6 oz/A at each application
  - Xonerate treatments (2)
    - October 1 + October 15 @ 2 oz/A at each application
    - April 1 + April 15 @ 2 oz/A at each application
  - Untreated control

Conclusions

Things to keep-in-mind with YOUR annual bluegrass program
- Different biotypes from location to location
  - What works for you might not work for your neighbor
- Seasonal changes in ABG populations are natural
  - You need an untreated check
Where did it go?

• No matter which herbicide you will use *Poa annua* cover drops dramatically over the summer
• If no untreated area is included on your fields, you will likely deduce that your strategy is working even if it isn’t

Things to keep-in-mind with YOUR annual bluegrass program

• Stay ahead
• Hardest to control weed on planet?

Things that will survey after nuclear holocaust

www.agry.purdue.edu/turf

http://purdueturftips.blogspot.com/
A New Purdue Weed Control Publication:
Turfgrass Weed Control for Professionals

Dr. Aaron Patton and Dan Weisenberger

Quick help for selecting herbicides for controlling specific weeds

Available July 17, 2012
88 pp. | 8.5 x 11
$12.00

Questions?

- Aaron Patton
  aipatton@purdue.edu
  (765) 494-9737