Weed Control in Sod Production
Travis Gannon
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Organic arsenical herbicides

- EPA contends organic arsenicals convert to inorganic forms causing them to become a groundwater threat

- August 09 2006 – EPA ruled organic arsenical herbicides would not be eligible to reregistration

- January 19 2007 – comment period closed

- November 26 2007 – EPA ruled in favor of 18 month phaseout for all commodities including cotton and turf
Manage (Monsanto) now sold as SedgeHammer (Gowan)

**Same product**

Labeled for use in fine and tall fescue, KY blue, perennial rye, bahia, bermuda, centipede, St. Augustine, and zoysia
Weed control with oxadiazon

- Formulations available:
  - Ronstar 2G
  - Ronstar 50WP
  - Ronstar 3.17SC
  - Oxadiazon 2G
  - Oxadiazon 50WSB

- Use rates
  - 100 – 150 lb/a (2 - 3 lb ai/a)
Weed control with oxadiazon

- Selective, preemergent herbicide for control of annual grasses and broadleaf weeds in established bluegrass, ryegrass, St. Augustinegrass, fescue, zoysia, etc.
  - crabgrass
  - goosegrass
  - annual sedge
  - oxalis
  - pigweeds
- Temporary discoloration may be observed and should not persist beyond 2 – 3 weeks
- Oxadiazon is shoot absorbed only
  - Do not split applications
- Do not apply to wet turf
Trade name: Tenacity

Weed control with mesotrione

Received federal registration, state should follow

Initially registered for golf courses and sod farms, residential and athletic fields will be registered later
Weed control with mesotrione

- HPPD inhibitor, first bleaching herbicide registered in turf
  - Normally takes 7 days to bleach
  - Symptoms last 14 – 21 days

- Controls select grass and broadleaf weeds

- Will require two applications
  - 2 – 3 week sequential

- Include NIS with postemergence applications

- May require tank mix partner for acceptable control
11 Monocot weeds on mesotrione label including:

- Crabgrass species
- Creeping bentgrass
- Goosegrass
- Nimblewill

Preliminary label, additional species to be added
34 dicot weeds on mesotrione label including:

- Chickweed species
- Henbit
- Buckhorn plantain
- Yellow woodsorrel
- Buttercup
- Carpetweed
- White clover
- Dandelion species
- Speedwell species
- Lawn burweed
- Ground ivy
- Oxalis

Preliminary label, additional species to be added
Weed control with mesotrione

- Use rate: 5-8 fl oz/a per application (0.125 – 0.25 lb ai/a)

- Maximum season application: 16 fl oz/a (0.5 lb ai/a)

- Mesotrione may be used prior to or at seeding of registered turf species excluding fine fescue

- Absorbed by leaves, roots, and shoots
  - Transported in xylem and phloem
# Turfgrass tolerance to mesotrione

<table>
<thead>
<tr>
<th>Highly tolerant</th>
<th>Intermediately tolerant</th>
<th>Susceptible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common centipedegrass</td>
<td>‘Raleigh’ St. Augustinegrass</td>
<td>Common bermudagrass</td>
</tr>
<tr>
<td>‘Tifblair’ centipedegrass</td>
<td>‘Tifsport’ bermudagrass</td>
<td>‘Emerald’ zoysiagrass</td>
</tr>
<tr>
<td>Tall fescue</td>
<td>‘Tifway’ bermudagrass</td>
<td>‘El Toro’ zoysiagrass</td>
</tr>
<tr>
<td>Ky bluegrass</td>
<td>‘Tifsport’ bermudagrass</td>
<td>Bentgrass</td>
</tr>
<tr>
<td>Perennial ryegrass</td>
<td>‘Tifway’ bermudagrass</td>
<td></td>
</tr>
<tr>
<td>Fine fescue</td>
<td>‘El Toro’ zoysiagrass</td>
<td></td>
</tr>
</tbody>
</table>
Turfgrass tolerance with mesotrione

- 0.125 lb ai/a (4 fl oz/a)
  - St. Augustine grass

- 0.16 lb ai/a (5 fl oz/a)
  - Perennial ryegrass
  - Fine fescue

- 0.16 – 0.25 lb ai/a (5 – 8 fl oz/a)
  - Kentucky bluegrass
  - Centipede grass
  - Tall fescue
Mesotrione injury on zoysiagrass
Mesotrione 0.25 lb ai applied June 6 (5-7 If crabgrass), photo taken June 14
Mesotrione 0.375 lb ai applied May 1 (1-3 If crabgrass), photo taken June 14
Rates are lb ai per acre. Trts were applied 7-30 and included NIS. Crabgrass averaged 2 tillers.
Rates are lb ai per acre. Trts were applied 7-23 and included NIS. Goosegrass averaged 3 tillers.
Certainty

- Active ingredient – sulfosulfuron
- 75% WDG
- Signal word – CAUTION
- 1.25 – 2 oz/a
- Use NIS @ 0.25% v/v
Certainty

Tolerant species:
- bermuda
- centipede
- St. Augustine (‘Palmetto’ and ‘Raleigh’)
- zoysia
Certainty

Weeds controlled:

- Kyllinga species
- Nutsedge, yellow and purple
- Annual sedge species
- Tall fescue
- Rye grass
- Annual bluegrass
- Lawn burweed
- White clover
- Common chickweed
- Common dandelion
- Virginia buttonweed (suppression)
- Dallisgrass (suppression)
Dismiss Turf Herbicide 4L (sulfentrazone)

- Active ingredient – sulfentrazone
- 4 SC
- Signal word – CAUTION
- 4 – 12 oz/a
- No adjuvant required
Dismiss (sulfentrazone)
Rates for single applications

<table>
<thead>
<tr>
<th>Grass Type</th>
<th>Rate (lbs ai/a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creeping bent, fine fescue, tall fescue, perennial ryegrass</td>
<td>0.125</td>
</tr>
<tr>
<td>Ky blue, bahiagrass, carpetgrass, centipedegrass, zoysiagrass</td>
<td>0.25</td>
</tr>
<tr>
<td>Common and hybrid bermudagrass, St. Augustinegrass</td>
<td>0.375</td>
</tr>
</tbody>
</table>
Weeds controlled:

- kyllinga species
- nutsedge, yellow
- nutsedge, purple (suppression)
- annual sedge species
- goosegrass
May be applied to established sod

Do not apply within three months of sod harvest
Echelon

- Active ingredients – sulfentrazone + prodiamine
- 4 SC
- Signal word – CAUTION
- No adjuvant required
- Labeled for sod farms but contains prodiamine
  - Sod established for six months and not within three months of harvest
# Echelon (sulfentrazone + prodiamine)

## Rates for single applications

<table>
<thead>
<tr>
<th>Grass Type Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creeping bentgrass, fine fescue, perennial ryegrass</td>
<td>8 - 12 oz/a</td>
</tr>
<tr>
<td>Ky blue, tall fescue, bahiagrass, carpetgrass, centipedegrass, zoysiaagrass</td>
<td>18 - 24 oz/a</td>
</tr>
<tr>
<td>Common and hybrid bermudagrass</td>
<td>24 – 36 oz/a</td>
</tr>
</tbody>
</table>
Echelon

Weeds controlled preemergence:

- annual bluegrass
- carpetweed
- carolina geranium
- chickweed species
- crabgrass species
- henbit
- goosegrass
Echelon

Weeds controlled postemergence:

- carpetweed
- chickweed species
- crabgrass species (early postemergence)
- kyllinga species
- nutsedge, yellow
- annual sedge species
- goosegrass
Preemergent Smooth Crabgrass Control
Early September

Dismiss 4F  Echelon L  Echelon G  Barricade 65WG
% Control
0.19 lb ai
0.25 lb ai
0.38 lb ai

lb ai sulfentrazone per acre LSD = 13.8

Dismiss and Echelon rates are lb ai sulfentrazone per acre. PRE treatments were applied 3-14-06. Evaluated rates of Echelon provided 0.38, 0.5 and 0.75 lb ai prodiamine. Comparison Barricade rates mimicked prodiamine contained in Echelon.
Lock Up

- DowAgro
- Active ingredient – penoxsulam
- Postemergence broadleaf herbicide
- Available only on granule
- Weed control similar to fluroxypyr (spotlight)
- Safer on St. Augustinegrass
Generics

- Prodiamine (Barricade)
- Glyphosate (Roundup)
- Trinexapac-ethyl (Primo Maxx)
- Quinclorac (Drive)
- Dithiopyr (Dimension)
- Oxadiazon (Ronstar)
Generics

- Generics may offer cost advantage to end user.
- Proprietary manufacturers may charge more but some of cost is rolled back into development of new products.
Preemergent Smooth Crabgrass Control with Prodiamine

Data collected 9-2-06, 180 DAIT. Rates are lb ai per acre. Sequential applied 8 WAIT. All products were 65 WDG.
Preemergent Smooth Crabgrass Control

with Oxadiazon

Data collected 9-2-06, 180 DAIT. Rates are lb ai per acre. All products were 50 WP.
Doveweed Control in Turf

Data collected 09-27-07, 57 DAIT. Treatments applied August 01. 07-D56
Postemergence goosegrass control

Data collected 09-04-07, 63 DAIT. Initial applications applied July 3, 2007, sequentials applied July 19. Did not evaluate two applications of diclofop. 07-D51
Questions?