Spring and Summer Weed Management in Athletic Fields

L. S. Warren (04-28-11)

Jun 15, 2010
1st two weeks of season: 6 – 1  First
Through 04-25-11: 8 – 12  Last
Discussion Topics

Ryegrass removal – spring transition (May)

Post goosegrass control (Apr-May-Jun)

Post crabgrass and goosegrass control (Apr-May-Jun)

Post crabgrass and broadleaf weed control (Apr-May-Jun)

Post nutsedge and kyllinga control (May-Jun)

Post broadleaf weed control (Apr-May-Jun)

Post dallisgrass control (May-Jun or Oct-Nov???)
Postemergence Weed Control
(Summer Annuals & Warm Season Perennials)

Control April – June...

...when these weeds have germinated, are young and actively growing, not producing seedheads or reproductive structures

Influenced by temperature, rain, turf canopy and growth stage (seeded, sprigged, well established?)
What are advantages to early weed identification and treatment?

Can control before desired turf gets thinned out

Less herbicide usually needed for control of younger plants (save money)

Herbicide may not control mature plants no matter the rate (Sequential applications usually needed for post control)

Herbicides do not kill weed seeds (you may kill the parent plant, but offspring will be unaffected)
May 15, 2008 (2 WAT)
Flazasulfuron (Katana 25DG)
Per. Ryegrass Removal From Bermuda

- **Sencor 75 Turf** 0.67 lb/A
  Kills in **2 to 3 days** - unattractive until fills in

- **Kerb WSP** 2 lb/A
  Kills in **4 to 6 weeks** - smoothest transition
Per. Ryegrass Removal From Bermuda

Sulfonylurea Herbicides

• Manor / Blade + NIS 0.5 oz/A + 0.25%
  Turf stand at least 1 year old

• TranXit GTA + NIS 2 oz/A + 0.25% 3 to 4 wk before desired date and repeat 3 wk later

• Monument + NIS 0.1 to 0.3 oz/A + 0.25%

• Revolver 1.09 pt/A

• Katana + NIS 0.5 to 1.5 oz/A + 0.25%

Generally kills in 2 to 3 weeks
Goosegrass Control Only

sulfentrazone (Dismiss 4F)

0.125 lb ai (4 oz) tall fescue
0.25 lb ai (8 oz) perennial bluegrass and warm season turf except bermuda and St. Augustine
0.375 lb ai (12 oz) bermuda and St. Augustine

(1 to 4 leaf stage - small!)
Goosegrass Control Only

foramsulfuron (Revolver 0.19SC)

Tolerance to bermudagrass and zoysiagrass
2 applications at 6 to 21 day intervals
17.4 to 26.2 fl oz/A (0.4 to 0.6 fl oz/M)
Improved control with Sencor 75 Turf
Can use low rate if 1 to 3 leaf goosegrass but may need a third application - apply 3rd application before re-tillering of new growth
Revolver 17 fl oz/A
Applied May, 2010
Photo Aug 18, 2010

Revolver 26 fl oz/A
Applied May, 2010
Photo Aug 18, 2010
Revolver fb Revolver
17 fb 17 fl oz/A
Initiated May, 2010
Photo Aug 18, 2010

Check
Echelon 4SC (prodiamine + sulfentrazone)

Use on lawns, athletic fields, golf courses
All warm season turf tolerant (18-36 oz) except St. Augustine as well as fescue (18-24 oz), ryegrass (12 oz) and bluegrass species
Can apply to turf after 2\textsuperscript{nd} mowing

Sod production: apply 6 months after establishment and do not harvest with 3 months
Short term phyto in cool season turf if mixed with nitrogen
Controls \textit{crabgrass} up to 1-3 leaves and \textit{goosegrass} up to 1-2 tillers but used most often as a preemergence herbicide
Pre and Post Smooth Crabgrass Control Using Various Echelon Formulations and Timings

DIGIS Sep 30

2009: Thorndale Country Club

LSD (P=.05)

- Echelon 4SC 1.5 pt/A
  Apr 2 pre
- Echelon 0.3G fertilizer
  375 lb/A   Apr 2 pre
- Echelon 4SC  2.25 pt/A
  Apr 17  1-3 lf
- Echelon 0.3G fertilizer
  375 lb/A   Apr 17  1-3 lf
- Echelon 4SC   2.25 pt/A
  May 12   1-2 till
- Echelon 0.3G fertilizer
  375 lb/A  May 12 1-2 till
- Check

% Control

25

2009: Thorndale Country Club
Pre and Post Goosegrass Control Using Various Echelon Formulations and Timings

ELEIN Sep 30

2009: Thorndale Country Club

LSD (P=.05)
- Echelon 4SC 1.5 pt/A Apr 2 pre
- Echelon 0.3G fertilizer 250 lb/A Apr 2 pre
- Barricade 4F 1.5 pt/A Apr 2 pre
- Echelon 4SC 2.25 pt/A May 12 1-4 lf
- Echelon 0.3G fertilizer 375 lb/A May 12 1-4 lf
- MSMA 6 Plus 2.67 pt/A May 12 1-4 lf
- Echelon 4SC 2.25 pt/A May 25 1-2 till
- Echelon 0.3G fertilizer 375 lb/A May 25 1-2 till
- MSMA 6 Plus 2.67 pt/A May 25 1-2 till
Sulfentrazone + Quinclorac (75WG) 
FMC

Use on fairways, roughs, athletic fields and sod farms
Tolerant to bermudagrass (32 oz/A), centipedegrass, zoysiagrass, seashore paspalum, as well as [tall fescue, Ky. bluegrass and perennial ryegrass (21 oz/A)]
No spray adjuvant needed
After treatment, wait 1 month to reseed, overseed or sprig
Establish sod for 3 months and wait 3 month before harvest
Controls crabgrass, 1-4 If goosegrass, foxtail, yellow nutsedge, kyllinga species and broadleaf weeds
Crabgrass and Goosegrass Control

fenoxaprop (Acclaim Extra)
Perennial ryegrass, fescues, zoysia, not bermuda!
0.75 to 2.5 pt/acre 2 apps 14 days apart
<table>
<thead>
<tr>
<th>Annual Grass</th>
<th>fl oz/A</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2 leaf</td>
<td>3.5</td>
<td>for multiple apps in bentgrass</td>
</tr>
<tr>
<td>Untillered</td>
<td>9</td>
<td>for tank-mixing with Pre’s</td>
</tr>
<tr>
<td>Untillered</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>1 to 2 tiller</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>3 to 4 tiller</td>
<td>28</td>
<td>do not exceed 28 oz to Ky. bluegrass or zoysiaagrass</td>
</tr>
<tr>
<td>4 to 5 tiller</td>
<td>39</td>
<td>do not exceed 39 oz to fescue or ryegrass species</td>
</tr>
</tbody>
</table>
Crabgrass and Goosegrass Control

metribuzin (Sencor 75 Turf)

**Apply only to established bermudagrass** with mowing height of 0.5 inch or greater

0.33 to 0.67 lb/acre    2 appls 7 to 10 days apart
Post Crabgrass and Broadleaf Weed Control

Generally target Apr through Jun for application.

Drive XLR8 1.5SL, Onetime 2.45SL, Q4 1.54L and Quincept 1.875SL, SquareOne 70WG: smooth and large crabgrass, broadleaves

Quinclorac: no goosegrass activity

Celsius 68WG: large crabgrass only, broadleaves, bahiagrass and bull (thin) paspalum
Drive XLR8: Better control of 4 to 8 tillered crabgrass?

Use on tall fescue, zoysiagrass, bermudagrass, Ky. bluegrass, seashore paspalum, ryegrass and bentgrass fairways with good soil moisture conditions

Controls crabgrass, signalgrass, foxtail, clover, dandelion, corn speedwell (no goosegrass control!)

Apply before 2nd tiller or to mature grasses (2 to 4 tillers not recommended)

Rate: 0.5 gallon/A + 1.5 pt/A MSO for Drive XLR8 1.5SL
1 lb/A + 1.5 pt/A MSO for Drive 75DF
Drive XLR8 + MSO
2 qt/A + 1.5 pt/A
Applied Jun 2, 2010
Photo Jun 7, 2010
Quinclorac 1.5 lb + MCPP 0.75 lb + Dicamba 0.20 lb/gal

Use on species of bermudagrass, bluegrass, fescue and ryegrass as well as creeping bentgrass, seashore paspalum and zoysiagrass.

Controls crabgrass, signalgrass, foxtail and broadleaf weeds

Rate: 0.68 to 2 qt/A + MSO at 1.5 pt/A.

Allow 28 days of seedling or sprig growth before treatment
If sprayed first, wait 28 days before seeding or sprigging
Use low rate split 30 days apart on creeping bentgrass
PBI-Gordon
Quinclorac + Sulfentrazone + 2,4-D amine + Dicamba
Cool season turf only (ryegrass, fescue)
Rate: 7 to 8 pt/A on crab, signalgrass, foxtail, broadleaves
Apply to seedlings after 2\textsuperscript{nd} or 3\textsuperscript{rd} mowing or 28 days after emergence
Spray 3 to 4 weeks after sodding, sprigging or plugging
Can seed 4 weeks after application

Nufarm Americas
Quincept 1.875SL
Quinclorac + 2,4-D amine + Dicamba
Cool season turf only
Rate: 7 to 8 pt/A on crab, signalgrass, foxtail, broadleaves
Apply to seedlings after 3\textsuperscript{rd} mowing
Spray 3 to 4 weeks after sodding, sprigging or plugging
Carfentrazone 3.9% + quinclorac 66.1% = 70WG
Bluegrass, fescue and ryegrass species,
Bermudagrass, bahiagrass, centipedegrass,
seashore paspalum and zoysiagrass
8 to 12 oz/A cool season; 12 to 18 oz/A warm season
Controls crabgrass, barnyardgrass, foxtails and various broadleaf weeds
Can seed 1 day after application
Apply 7 days after seed or sprig emergence – wait 14 days after zoysia emergence to reduce length of phyto
Hybrid bermuda phyto may occur but recovers by 12 days
Don’t spray to turf transitioning out of dormancy
Thiencarbazone + Iodosulfuron + Dicamba (68WG)
Use on bermuda, zoysia, centipede and St. Augustinegrass
Rate: 2.5 to 4.9 oz/A + 0.25% NIS or MSO
Controls large crabgrass, foxtail, bahiagrass, bull paspalum and broadleaf weeds
Provides 60 days residual control
Overseed rye grass 2 weeks after application
Apply 30 days prior to seeding bermuda or zoysia or wait 2 to 3 weeks after seedling or sprig emergence.
**Purple Nutsedge**
- Blunt leaf tips
- Purple seedheads
- Tuber chains
- Brownish-black, hairy tubers
  (Bitter taste)

**Yellow Nutsedge**
- Pointed needlelike leaf tips
- Yellow seedheads
- Tubers do not form chains
- Tannish-brown tubers
  (No flavor)
Purple Nutsedge Control averaged over 1997 - 2007

Rates are product per acre, averaged across formulations, locations, years.
For nutsedge and kyllinga species control, initiate treatments in Apr, May or Jun (before tuber formation or rhizome maturity) when plants are young and actively growing. Reapply at appropriate intervals based on the label of the herbicide of your choice.
Yellow Nutsedge Control
averaged over 1997 - 2007

Rates are product per acre, averaged across formulations, locations, years.
Kyllinga Species Control averaged over 1997 - 2007

Rates are per acre, averaged across formulations, locations, years.
Kyllinga species

Mat-forming, produces rhizomes (no tuber)
Strong fragrance when crushed or mowed
Green: seedheads appear throughout summer and fall
False-green: seedheads appear all at once in late season
Monument + NIS 0.56 oz/A + 0.25% May 23, 2007 (4 WAT)
Nutsedge and Kyllinga Spp. Control

sulfentrazone (Dismiss 4SC)

12 fl oz/acre: bermuda; 8 fl oz/acre: Ky. bluegrass
4 fl oz/acre: perennial ryegrass, tall fescue
Excellent yellow nutsedge and kyllinga spp. control
Poor to fair purple nutsedge control

sulfentrazone + imazethapyr (Dismiss South 4SC)
9.5 to 14.4 fl oz/acre: bermuda, zoysia, centipede
Enhanced purple nutsedge control
Nutsedge and Kyllinga Spp. Control

flazasulfuron (Katana 25DG)

Apply to bermudagrass, zoysiagrass, centipede grass

3 oz/A needed for perennial nutsedge control with sequential added when new growth is evident – not as long-lasting as Monument or Certainty

1.5 to 2.25 oz/A will control kyllinga species – usually season-long with only one application
Nutsedge and Kyllinga Spp. Control

Sedgehammer – good control (only suppress green kyllinga)
1.33 oz/acre + 0.5% NIS (retreat 6-10 weeks if needed)
Most warm AND cool season grasses tolerant

Monument 75WG – good to excellent control
0.56 oz/acre + 0.25% v/v NIS (retreat 4-6 weeks if needed)
Apply to bermudagrass and zoysiagrass

Certainty – good to excellent control
1.25 oz/acre + 0.25% v/v NIS (retreat 4-10 weeks if needed)
Apply to bermuda, zoysia, centipede and St. Augustine
Postemergence Broadleaf Weed Herbicides
Labeled for Athletic Field Use

Generally apply in Apr – Jun before seedhead or perennial structure formation for summer weed control
Postemergence Broadleaf Weed Herbicides Labeled for Athletic Field Use

1960’s – 70’s
2,4-D  Mecoprop  Dicamba
Weedar 64  MCPP 4K  Banvel, Vanquish
Three-way mixes:  Trimec, Triplet SF, Three-Way Selective

1980’s:  MCPA-containing products
Tri-Power, Cool Power, Horsepower

1990’s:  Clopyralid-containing products (legumes)
Lontrel, Confront, Millennium Ultra, Millennium Ultra 2
Postemergence Broadleaf Weed Herbicides
Labeled for Athletic Field Use

2000’s
Fluroxypyr-containing products (woody plants - buttonweed)
Escalade, Escalade Low Odor, Escalade 2

Carfentrazone-containing products (quicker burndown)
Speed Zone, Speed Zone Southern, Power Zone, Quicksilver

Sulfentrazone-containing products (quicker burndown)
Dismiss, Dismiss Southern, Surge, T-Zone

Penoxsulam: Lockup formulations
Imprelis 2SL – 3 to 6 fl oz/A

Cool-season turfgrass species are tolerant

**Tall fescue (can apply at any growth stage!!)**

Kentucky bluegrass
Perennial ryegrass

Not recommended in warm-season turf
Possibly dormant applications
zoysia > bermuda > centipede > St. Augustine
Imprelis

Absorption and translocation
Systemic, phloem and xylem mobile, absorbed by roots and leaves
Translocated throughout plant, accumulates in meristematic regions
Foliar and residual control of perennial and annual weeds
Average soil half-life of 30 – 90 d
Imprelis

Do not use grass clippings from treated areas for mulching or compost!!!

Do not seed, sod, sprig or plug warm season grasses until 60 days after application.
### 90%+ Control with Imprelis

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dogfennel</td>
<td><em>Eupatorium patens</em></td>
</tr>
<tr>
<td>Curly dock</td>
<td><em>Bidens frondosa</em></td>
</tr>
<tr>
<td>Carolina geranium</td>
<td><em>Calliostoma luteum</em></td>
</tr>
<tr>
<td>Dichondra</td>
<td><em>Dichondra</em></td>
</tr>
<tr>
<td>Purple cudweed</td>
<td><em>Rudbeckia hirta</em></td>
</tr>
<tr>
<td>White clover</td>
<td><em>Trifolium repens</em></td>
</tr>
<tr>
<td>Hop clover</td>
<td><em>Tephrosia virginiana</em></td>
</tr>
<tr>
<td>Henbit</td>
<td><em>Lamium amplexica</em></td>
</tr>
<tr>
<td>Purple deadnettle</td>
<td><em>Glechoma hederacea</em></td>
</tr>
<tr>
<td>Common lespedeza</td>
<td><em>Lespedeza striata</em></td>
</tr>
<tr>
<td>Common chickweed</td>
<td><em>Sonchus asper</em></td>
</tr>
<tr>
<td>Common dandelion</td>
<td><em>Taraxacum officinale</em></td>
</tr>
<tr>
<td>Horseweed</td>
<td><em>PediAREA ymum</em></td>
</tr>
<tr>
<td>Annual blue-eyed grass</td>
<td><em>Equisetum arvense</em></td>
</tr>
<tr>
<td>Little mallow</td>
<td><em>Malva parviflora</em></td>
</tr>
<tr>
<td>Buckhorn plantain</td>
<td><em>Panicum miliaceum</em></td>
</tr>
<tr>
<td>Broadleaf plantain</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Bracted plantain</td>
<td><em>Equisetum arvense</em></td>
</tr>
<tr>
<td>Florida pusley</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Facelis</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Brazilian catsear</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Wild violet</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Goldenrod</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Broadleaf pink purslane</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Hairy buttercup</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Lawn burweed</td>
<td><em>Atriplex patula</em></td>
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<tr>
<td>Dollarweed</td>
<td><em>Atriplex patula</em></td>
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<tr>
<td>Virginia buttonweed</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Florida betony</td>
<td><em>Atriplex patula</em></td>
</tr>
<tr>
<td>Mock strawberry</td>
<td><em>Atriplex patula</em></td>
</tr>
</tbody>
</table>
50-90%+ Control with Imprelis (Sequentialss needed)

Parsley-piert (if just germinating in fall - cotyledon)
Carpetgrass (regrowth)
Smooth crabgrass (if very young)
Corn speedwell (not figured correct timing yet!) – possibly a 3 wk sequential initiated in the fall, not spring

Erratic Weed Control Due to Severe Drought Conditions
Prostrate spurge - 2007
Carpetweed - 2007
0% Control with Imprelis

No injury symptoms to mouseear chickweed, parsley-piert, red sorrel and yellow woodsorrel (0% control)

Slight to moderate injury symptoms to corn speedwell, wild garlic and wild radish but little to no actual control (possibly benefit from timely sequential application?)
Dallisgrass (*Paspalum dilatatum*)

- Spot-applications using Celsius WG (4.9 oz/A) plus Revolver (2 fl oz/M) plus NIS (0.25%) applied in late summer to early fall followed by sequential 14 days later will suppress/control dallisgrass.

- Aug 2, Aug 17…Photo Aug 31, 2010
Non treated

Roundup ProMax
10.7 fl oz/A
Applied Oct 16
Photo Nov 6
Dallisgrass Control Using Roundup ProMax 4.5SL in Late Summer / Early Fall

2007-08: Hidden Valley Golf Club
Common Bermudagrass Effects from Roundup ProMax 4.5SL in Late Summer / Early Fall

2007-08: Hidden Valley Golf Club

Check influenced by PASDI infestation