Weeds in Landscapes

Troublesome weeds are mostly annuals

*Poa annua*, Crabgrass, Goosegrass, Barnyardgrass, Chamberbitter, Sicklepod, Kyllinga.

Some perennials are very difficult to control without forethought.

Poison Ivy, Nutsedge, Dollarweed
Major Take-Home Objectives

Use existing resources to maintain better landscapes.

Design ornamental landscapes with weed control as a priority.

Learn the limited herbicides labelled for weed control in ornamental landscapes and incorporate them into your routine.
Design Is Fundamental

Designing for cultural control of weeds

Plant canopies should close with maturity.

Ground covers planted with herbicide selection in mind.

Use hardscapes and mulch in high traffic/disturbance areas.

Mulch is part of the solution and part of the problem

Too thick: compromised preemergence herbicide control
Too thin: surface germinating weeds emerge with ease
Creative hardscapes:
Manage moisture and disturbance
Nonselective herbicide friendly
Preemerge herbicides work great.
Perennial ground covers: Dominant plant types that enable easy preemergence herbicide selection.
Mass plantings of ornamental grasses:
Simplify broadleaf weed control.
Preemergence herbicide selection is easy.
Their dominant canopy suppresses other weeds.
Broadleaf-only plantings:

Easy Grass Control with “Fops” and Dims”.
Use PRE’s that contain multiple active ingredients.

Rarely does a single active provide control of the full spectrum of weeds present in a landscape.

Example

Trifluralin (same as Treflan) provides control of grasses.
Isoxaben (same as Gallery) controls broadleaves.
Snapshot (trifluralin + isoxaben) is the combination.
<table>
<thead>
<tr>
<th>Common Landscape PRE’s</th>
<th>Example Product</th>
<th>Active Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Surflan, Balan</td>
<td>oryzaline</td>
</tr>
<tr>
<td>3</td>
<td>Pendulum 2G</td>
<td>pendimethalin</td>
</tr>
<tr>
<td>3</td>
<td>Pendulum Aquacap</td>
<td>pendimethalin</td>
</tr>
<tr>
<td>3</td>
<td>Lebanon Treflan 5G</td>
<td>trifluralin</td>
</tr>
<tr>
<td>3</td>
<td>Hi-Yield Dimension</td>
<td>dithiopyr</td>
</tr>
<tr>
<td>3+14</td>
<td>Harrell's 4.8G</td>
<td>trifluralin + oxyfluorfen</td>
</tr>
<tr>
<td>3+15</td>
<td>Freehand</td>
<td>pendimethalin + dimethenamid</td>
</tr>
<tr>
<td>3+21</td>
<td>Snapshot</td>
<td>trifluralin + isoxaben</td>
</tr>
<tr>
<td>3+21</td>
<td>Gemini</td>
<td>prodiamine + isoxaben</td>
</tr>
<tr>
<td>3+21+14</td>
<td>Showcase</td>
<td>trifluralin + isoxaben + oxyfluorfen</td>
</tr>
<tr>
<td>14</td>
<td>Goal</td>
<td>oxyfluorfen</td>
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<tr>
<td>5</td>
<td>Hi-Yield Atrazine, Scotts Bonus S</td>
<td>atrazine</td>
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<tr>
<td>5</td>
<td>Princep</td>
<td>simazine</td>
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<tr>
<td>14</td>
<td>Ronstar</td>
<td>oxadiazon</td>
</tr>
<tr>
<td>14</td>
<td>Broadstar, sureguard</td>
<td>flumioxazin</td>
</tr>
<tr>
<td>14+8</td>
<td>Goose and Crab</td>
<td>oxadiazon + bensulide</td>
</tr>
<tr>
<td>15</td>
<td>Tower</td>
<td>dimethanamid</td>
</tr>
<tr>
<td>15</td>
<td>Devrinol 2G</td>
<td>napropamide</td>
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<tr>
<td>21</td>
<td>Gallery</td>
<td>isoxaben</td>
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<tr>
<td>20</td>
<td>Casoron 4G, Barrier</td>
<td>dichlobenil</td>
</tr>
<tr>
<td>29</td>
<td>Specticle G</td>
<td>indaziflam</td>
</tr>
</tbody>
</table>
PRE’s Are Often Granular Formulations

<table>
<thead>
<tr>
<th>MOA</th>
<th>Example Product</th>
<th>Active Ingredient</th>
<th>Rate Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Casoron 4G, Barrier</td>
<td>dichlobenil</td>
<td>3 lb/1000 ft²</td>
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<tr>
<td>29</td>
<td>Specticle G</td>
<td>indaziflam</td>
<td>3 lb/1000 ft²</td>
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<tr>
<td>15</td>
<td>Devrinol 2G</td>
<td>napropamide</td>
<td>3 lb/1000 ft²</td>
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<tr>
<td>14</td>
<td>Ronstar 2G</td>
<td>oxadiazon</td>
<td>2.3 lb/1000 ft²</td>
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<tr>
<td>14</td>
<td>Broadstar</td>
<td>Flumioxazin</td>
<td>3.4 lb/1000 ft²</td>
</tr>
<tr>
<td>14+8</td>
<td>Goose and Crab</td>
<td>oxadiazon + bensulide</td>
<td>2.6 lb/1000 ft²</td>
</tr>
<tr>
<td>14+3</td>
<td>Harrell's 4.8 G</td>
<td>oxyfluorfen + trifluralin</td>
<td>2.3 lb/1000 ft²</td>
</tr>
<tr>
<td>3</td>
<td>Pendulum 2G</td>
<td>pendimethalin</td>
<td>3 lb/1000 ft²</td>
</tr>
<tr>
<td>3+15</td>
<td>Freehand</td>
<td>pendimethalin + dimethenamid</td>
<td>3 lb/1000 ft²</td>
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<tr>
<td>3</td>
<td>Lebanon Treflan 5G</td>
<td>trifluralin</td>
<td>1.8 lb/1000 ft²</td>
</tr>
<tr>
<td>3+21</td>
<td>Snapshot</td>
<td>trifluralin + isoxaben</td>
<td>3 lb/1000 ft²</td>
</tr>
<tr>
<td>3+21+14</td>
<td>Showcase</td>
<td>trifluralin + isoxaben + oxyfluorfen</td>
<td>2.3 lb/1000 ft²</td>
</tr>
</tbody>
</table>
**Ingredients:** isoxaben (75% DF)

**For use in:** Commercial Turf, Landscapes, Containers, Conifers

**Target pests:**
- Over 40 broadleaf weeds and some grasses
- Burweed, speedwell, smartweed, pigweed, henbit

**Ornamentals:**
- Safe on a broad range of ornamentals, including many ground covers
- Labelled for English Ivy, Liriope, Asiatic Jasmine.
- Not safe on Rhotodendrun, Hydrangea, Ajugua, Sedum

**Application:**
- 0.25 to 0.5 oz / 1000 ft²
- $3 to 4 / 1000 ft²
Ingredients: pendimethalin (3.8 lb/gallon)

For use in: Lawn and landscape, roadsides, parking areas, nurseries, non-fruit bearing fruit and nutcrops

Target pests: Preemergence control grass and certain broadleaf weeds

Ornamentals
Can be applied within ornamental bulbs prior to emergence
Labelled for Vinca, English Ivy, Asiatic Jasmine, Liriope

Application:
1.6 to 3.2 fl oz / 1000 ft²
$1.5 to 3 / 1000 ft²
Ingredients: pendimethalin (2% granular)

For use in: Lawn and landscape, noncropland

Target pests:
- Preemergence control grass and certain broadleaf weeds

Ornamentals
- Can be applied within ornamental bulbs prior to emergence
- Labelled for Vinca, English Ivy, Asiatic Jasmine, Liriope

Application:
- 2.3 to 4.6 lb / 1000 ft²
- $5 to 10 / 1000 ft²

Details and/or trivia:
- Granular increases penetration of thick ground cover or plant canopy without irrigation.
**Ingredients:** trifluralin and isoxaben (2.5 granular)

**For use in:** Landscapes, grounds maintenance. Turf is tolerant but not labelled.

**Target pests:**
Preemergence control grass and certain broadleaf weeds

**Ornamentals**
Can be applied to a range of ornamentals and ground covers: Liriope, Sedum, Verbena

**Application:**
2.3 to 4.6 lb / 1000 ft²
$5.50 to 11 / 1000 ft²

**Details and/or trivia:**
Excellent grass and good broadleaf control. Granular increases penetration of thick canopy.
**Ingredients:** prodiamine

**For use in:** Residential and non-residential turf.

Warm and Cool Season turf as well as many landscape ornamentals.

**Target pests:**
Grass and Broadleaf Weeds

**Ornamentals**
Can be applied within ornamental bulbs prior to emergence
Labelled for Vinca, English Ivy, Asiatic Jasmine, Liriope

**Application:**
0.5 to 1.1 fl oz / 1000 ft²
$0.60 to 1.50 / 1000 ft²

**Details and/or trivia:**
In lawns, this is fairly standard for spring and fall applications.
Ingredients: prodiamine and isoxaben

For use in: Residential and non-residential turf.
             Warm and Cool Season turf as well as many landscape ornamentals.

Target pests:
Grass and Broadleaf Weeds

Application:
1 to 2 fl oz / 1000 ft²
$2.50 to 5 / 1000 ft²

Details and/or trivia:
Presumed excellent grass and good broadleaf control. Granular?
Ingredients: dimethenamid (6 lb/gallon)

For use in: Turfgrass and landscape, grounds maintenance, patios, parking lots

Target pests:
Preemergence control of sedges, goosegrass, spurge.

Ornamentals
Can be applied to Liriope, Sedum, Verbena, Sequential applications on certain plants are restricted, including Hydrangea and Magnolia. May cause damage to some ornamental grasses.

Application:
0.48 to 0.73 fl oz / 1000 ft²
$1.20 to 2.40 / 1000 ft²

Details and/or trivia:
Best applied as second spring application for nutsedge and goosegrass emergence. Some grass and broadleaf control.
Ingredients: dimethenamid and pendimethalin (1.75% granular)

For use in: Turfgrass and landscape, grounds maintenance, patios, parking lots

Target pests:
- Preemergence control of grass and certain broadleaf weeds

Ornamentals
- Can be applied to Liriope, Sedum, Verbena, Sequential applications on certain plants are restricted, including Hydrangea and Magnolia.
- May cause damage to some ornamental grasses.

Application:
- 2.3 to 4.6 lb / 1000 ft²
- $6 to 12 / 1000 ft²

Details and/or trivia:
- Excellent grass and good broadleaf control. Granular increases penetration of thick canopy.
**Ingredients:** flumioxazin (0.25% granular)

**For use in:** Landscapes ornamentals, non-fruit bearing trees and orchards

**Target pests:**
- Preemergence control of grass and certain broadleaf weeds
- Crabgrass, goosegrass, annual bluegrass.

**Ornamentals**
- Can be applied to many trees and shrubs.
- DO NOT use on Hydrangea, Nandina, Butterfly Bush, Spirea

**Application:**
- 3.4 lb / 1000 ft²

**Details and/or trivia:**
- Similar mode of action as Ronstar. Similar concern with foliar burn.
Ingredients: indaziflam (0.0224% granular)
For use in: Turfgrass, landscape ornamentals, hardscapes
Target pests:
Preemergence control of grass and certain broadleaf weeds
Doveweed, foxtail, crabgrass, goosegrass, annual bluegrass
Ornamentals
Can be applied to Asiatic Jasmine, Juniper, Lantana,
DO NOT use on Liriope, Hydrangea, Mint, Muhlygrass, Mondogras, Spirea
Application:
2.3 to 4.6 lb / 1000 ft²
$5.50 to 11 / 1000 ft²
Details and/or trivia:
Excellent control all around but caution should be used in sandy soils.
Landscape PRE Timing

- Crabgrass germinates
  - Spring

- PRE
  - Summer

- PRE
  - Fall

- PRE
  - Winter

- Poa annua germinates
  - Spring
Selective herbicides for landscapes

Categorized based upon grass or broadleaf activity.

Very few available for broadleaf in broadleaf control.

Three groups

Grass herbicides – control grasses, safe on broadleaves.
Broadleaf herbicides – control broadleaves, safe on grasses.
True selective herbicides – safety is rate dependent and control is variable.
Grass Getter®

Kills Weedy Grasses Without Injuring Desirable Plants

Active Ingredient:
Sethoxydim: 2-[(ethoxyimino)butyl]-5-[2-(ethyithio)propyl]-3-hydroxy-2-cyclohexen-1-one** 13.0%
Other Ingredients: 82.0%
Total: 100.0%

**Equivalent to 0.19 pounds sethoxydim per pint. Contains petroleum distillate.

EPA Reg. No. 7965-55-54705
EPA Est. No. 4849-CA-1

KEEP OUT OF REACH OF CHILDREN
WARNING/AVISO See Attached Booklet for Precautionary Statements and Directions for Use

NET CONTENTS: 1 PINT/473.16 mL

SA SOUTHERN AG®

Grass Killer Vantage Herbicide

A selective, broad spectrum postemergence herbicide for control of Poa and other grasses without injuring desirable plants.

Active Ingredient:
Sethoxydim: 2-[(ethoxyimino)butyl]-5-[2-(ethyithio)propyl]-3-hydroxy-2-cyclohexen-1-one** 13.0%
Inert Ingredients: 87.0%
Total: 100.0%

**Equivalent to 0.19 pounds sethoxydim per gallon.

KEEP OUT OF REACH OF CHILDREN

Net Contents: Liquid 1 Pint (.474 liter)

SA SOUTHERN AG®

Vantage Herbicide

(same as POAST)

$28.95
The Grass Herbicides (AKA: ACCase inhibitors)

**Ingredients:** sethoxydim, fluazifop, clethodim, fenoxaprop

**For use in:** Grass control within landscapes, grounds maintenance.

**Target pests:**
- Grasses
- Ornamentals
  - Can be applied to a range of ornamentals and ground covers: Liriope, Mondogras, Sedum, Verbena, etc...

**Application:**
- Various

**Details and/or trivia:**
- Excellent grass control. Liquid application only. Relies upon foliar contact.
Segment (2.25 pt / A) applied in monkeygrass (*Liriope*)

This same application can be applied to centipedegrass. *Liriope* is a lilly, so not tolerant of broadleaf herbicides.
Fusilade II (24 fl oz / A) applied in Syngenta Operation Pollinator habitat (13 native species).
Broadleaf weed control in landscapes:

Broadleaf herbicides will damage broadleaf plants. Generally applied as directed spray to avoid desired plant material.

Ingredients for use in grasses:
- 2,4-D, clopyralid, triclopyr

Read the label:
- Some products are limited to commercial applications only.
- Avoid contact with foliage and bark of trees and shrubs.
- Products may have root absorption. Caution should be used!
Postemergence Selective Weed Control
Rate and species dependent.
Requires caution and knowledge of plant material.

Ingredients:
halosulfuron, bentazon, imazaquin

Read the label:
Rates vary!
Generally, do not apply “over the top” of desired foliage.
Ingredients: imazaquin

For use in: Turfgrass and ornamentals

Target pests:
- purple and yellow nutsedge, green kyllinga, pigweed, deadnettle, clover, hairy bittercress, chickweed, sicklepod?

Ornamentals
- Indian hawthorned, yaupon holly, juniper, Asiatic jasmine, *Liriope*, mondograss, hosta

Details and/or trivia:
Apply with surfactant for sedge control
**KILLS NUTSEDGE**
Elimina la Chufa

**Kills Tough Weeds in Lawns**
Elimina las malezas resistentes en céspedes

Selective Herbicide for Use in Established Bermudagrass, Buffalograss, Centipedegrass, St. Augustinegrass, Zoysiagrass and Selected Landscape Ornamentals and Groundcovers

ACTIVE INGREDIENT:
Ammonium salt of imazaquin (2,4,5-trihydroxy-4-methyl-6-(4-oxo-4H-imidazol-1-yl)-5-oxo-1H-imidazol-2-yl-3-quinolinesulfonic acid) 8.6% w/w

OTHER INGREDIENTS:
100.0% w/w

TOTAL:
100.0% w/w

*Equivalent to 3.14% 2,4,5-trihydroxy-4-methyl-6-(4-oxo-4H-imidazol-1-yl)-5-oxo-1H-imidazol-2-yl-3-quinolinesulfonic acid (1 pt contains 0.0075 lbs. of active ingredient at this free acid)

**NET CONTENTS/CONTENIDO NETO**
24 FL. OZ. (710 mL)

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**KILLS & PREVENTS Tough Weeds**
Elimina y previene las malezas resistentes

Kills other listed weeds.

ACTIVE INGREDIENT:
Atrazine 4.00%
Related compounds 0.08%
OTHER INGREDIENTS 95.92%
TOTAL 100.00%

**NET CONTENTS/CONTENIDO NETO**
32 FL. OZ. (946 mL)
Ingredients: halosulfuron
For use in: Turfgrass and ornamentals
Target pests: Sedges
Ornamentals
Applied as a post-directed application around woody ornamentals. Avoid canopy contact.
Details and/or trivia: Apply with surfactant
**Ingredients:** bentazon

**For use in:** Turfgrass and ornamentals

**Target pests:**
- yellow nutsedge, coffee senna, smartweed, wild mustard, prickly sida, purslane, ragweed, shepherd’s purse, spurred anoda, lawn burweed

**Ornamentals**
- Liriope, Ajuga, boxwood, impatiens, English ivy, marigolds, ornamental cabbage, petunia, snapdragon, yew

**Details and/or trivia:**
- Apply with crop oil or other non-phytotoxic oil concentrate
Landscape Weed Management

Pro Tips:

Preemergence strategy is key.

Audits of site specific plants and requirements should be done in high visibility areas.

Train staff for postemergence selective and non-selective applications.