

# Weed Management STRATEGIES FOR THE LANDSCAPE



Jay McCurdy, PhD

Assistant Professor, Turf Extension Specialist  
Mississippi State University



# 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**

**Preemerg 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”.**





# Preemergence herbicides for Landscapes

**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.

# Common Landscape PRE's

MOA	Example Product	Active Ingredient
3	Surflan, Balan	oryzaline
3	Pendulum 2G	pendimethalin
3	Pendulum Aquacap	pendimethalin
3	Lebanon Treflan 5G	trifluralin
3	Hi-Yield Dimension	dithiopyr
3+14	Harrell's 4.8G	trifluralin + oxyfluorfen
3+15	Freehand	pendimethalin + dimethenamid
3+21	Snapshot	trifluralin + isoxaben
3+21	Gemini	prodiamine + isoxaben
3+21+14	Showcase	trifluralin + isoxaben + oxyfluorfen
14	Goal	oxyfluorfen
5	Hi-Yield Atrazine, Scotts Bonus S	atrazine
5	Princep	simazine
14	Ronstar	oxadiazon
14	Broadstar, sureguard	flumioxazin
14+8	Goose and Crab	oxadiazon + bensulide
15	Tower	dimethanamid
15	Devrinol 2G	napropamide
21	Gallery	isoxaben
20	Casoron 4G, Barrier	dichlobenil
29	Specticle G	indaziflam



# PRE's Are Often Granular Formulations

MOA	Example Product	Active Ingredient	Rate Estimate
20	Casoron 4G, Barrier	dichlobenil	3 lb/1000 ft <sup>2</sup>
29	Specticle G	indaziflam	3 lb/1000 ft <sup>2</sup>
15	Devrinol 2G	napropamide	3 lb/1000 ft <sup>2</sup>
14	Ronstar 2G	oxadiazon	2.3 lb/1000 ft <sup>2</sup>
14	Broadstar	Flumioxazin	3.4 lb/1000 ft <sup>2</sup>
14+8	Goose and Crab	oxadiazon + bensulide	2.6 lb/1000 ft <sup>2</sup>
14+3	Harrell's 4.8 G	oxyfluorfen + trifluralin	2.3 lb/1000 ft <sup>2</sup>
3	Pendulum 2G	pendimethalin	3 lb/1000 ft <sup>2</sup>
3+15	Freehand	pendimethalin + dimethenamid	3 lb/1000 ft <sup>2</sup>
3	Lebanon Treflan 5G	trifluralin	1.8 lb/1000 ft <sup>2</sup>
3+21	Snapshot	trifluralin + isoxaben	3 lb/1000 ft <sup>2</sup>
3+21+14	Showcase	trifluralin + isoxaben + oxyfluorfen	2.3 lb/1000 ft <sup>2</sup>



**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 ft<sup>2</sup>

\$3 to 4 / 1000 ft<sup>2</sup>

**TURFGRASS MANAGEMENT**







**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 ft<sup>2</sup>

\$1.5 to 3 / 1000 ft<sup>2</sup>

**TURFGRASS MANAGEMENT**





**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 ft<sup>2</sup>

\$5 to 10 / 1000 ft<sup>2</sup>

**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 ft<sup>2</sup>

\$5.50 to 11 / 1000 ft<sup>2</sup>

**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 ft<sup>2</sup>

\$0.60 to 1.50 / 1000 ft<sup>2</sup>

**Details and/or trivia:**

In lawns, this is fairly standard for spring and fall applications.

**TURFGRASS MANAGEMENT**







**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 ft<sup>2</sup>

\$2.50 to 5 / 1000 ft<sup>2</sup>

**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 ft<sup>2</sup>

\$1.20 to 2.40 / 1000 ft<sup>2</sup>

**Details and/or trivia:**

Best applied as second spring application for nutsedge and goosegrass emergence. Some grass and broadleaf control.

**TURFGRASS MANAGEMENT**







**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 ft<sup>2</sup>

\$6 to 12 / 1000 ft<sup>2</sup>

**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 ft<sup>2</sup>

**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, Mondograss, Spirea

**Application:**

2.3 to 4.6 lb / 1000 ft<sup>2</sup>

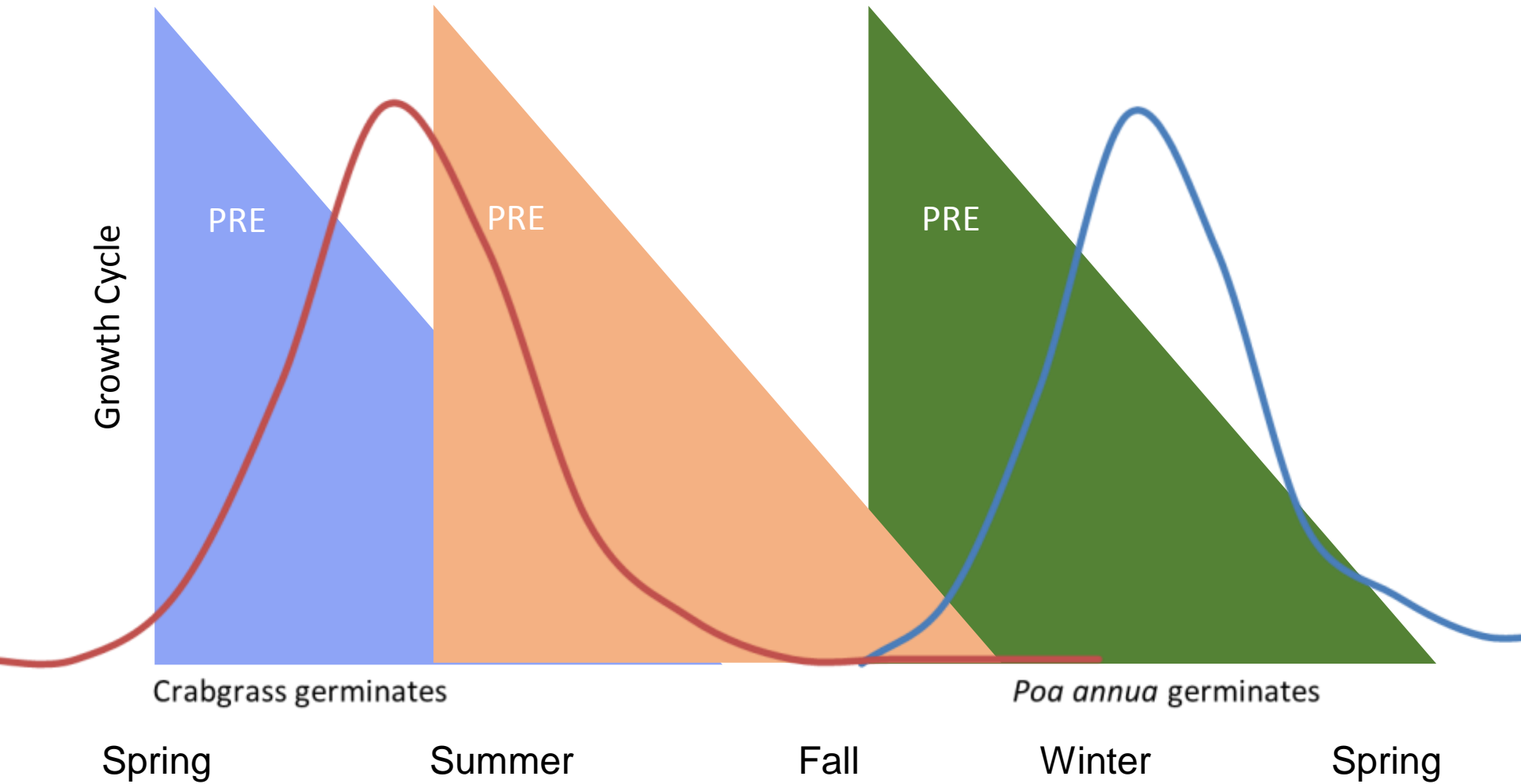
\$5.50 to 11 / 1000 ft<sup>2</sup>

**Details and/or trivia:**

Excellent control all around but caution should be used in sandy soils.



# Landscape PRE Timing





# 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.

Postemergence  
Grass Herbicide



# Grass Getter<sup>®</sup>

**Kills Weedy Grasses  
Without Injuring  
Desirable Plants**

**Active Ingredient:**

Sethoxydim: 2-[1-(ethoxyimino)  
butyl]-5-[2-(ethylthio)propyl]-3-  
hydroxy-2-cyclohexen-1-one\*\* ..... 18.0%  
Other Ingredients ..... 82.0%  
Total ..... 100.0%

\*\*Equivalent to 0.19 pounds sethoxydim per pint.

Contains petroleum distillate.

EPA Reg. No. 7969-58-54705

EPA Est. No. 48498-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** BASF-022510 0397/0610(03)



**SA SOUTHERN  
50 AG<sup>®</sup>**

# GRASS KILLER contains VANTAGE<sup>®</sup> HERBICIDE

**Active Ingredient:**

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

\*Equivalent to 1 pound of sethoxydim per gallon.

**KEEP OUT OF REACH  
OF CHILDREN  
CAUTION**

See label booklet for additional Precautionary  
Statements and Directions for use



A selective, broad spectrum  
postemergence herbicide  
control of  
and per  
grass

ornam  
nonfoo  
noncrop  
lis  
this

**Net Contents Liquid  
1 Pint (.474 liter)**

96874

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, Mondo grass, Sedum, Verbena, etc...

**Application:**

Various

**Details and/or trivia:**

Excellent grass control. Liquid application only. Relies upon foliar contact.







**segment**<sup>™</sup>  
HERBICIDE

**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!



# Broadleaf and Sedge Control

## 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 jamine, *Liriope*, mondograss, hosta

**Details and/or trivia:**

Apply with surfactant for sedge control





# IMAGE<sup>®</sup>

Herbicide Consumer Concentrate



Nutsedge

## KILLS NUTSEDGE

*Elimina la Chufa*

**Kills Tough Weeds  
in Lawns**

*Elimina las malezas resistentes en céspedes*



Dollarweed



Annual Bluegrass  
(*Poa annua*)



Wild Onion or  
Wild Garlic

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-dihydro-4-  
methyl-4(1-methylethyl)-5-oxo-1H-imidazol-  
2-yl]-3-quinolinecarboxylic acid)\* ..... 33%  
OTHER INGREDIENTS ..... 96.7%  
TOTAL ..... 100.0%

\* Equivalent to 3.14% 2-[4,5-dihydro-4-methyl-  
4(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-  
quinolinecarboxylic acid (1 pint contains  
0.0375 lbs. of active ingredient as the free acid)

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

Keep out of reach of children

**CAUTION**

See back booklet for additional  
Precautionary Statements & First Aid

Manténgase fuera del alcance de los niños

**PRECAUCIÓN**

Consulte el folleto atrás para conocer los avisos  
de precaución adicionales y los primeros auxilios

# IMAGE<sup>®</sup>

Herbicide

## for ST. AUGUSTINEGRASS and Centipedegrass

para grama San Agustín  
y grama ciempiés



St. Augustinegrass



Centipedegrass



Sandspur



Spurge

with  
con

## ATRAZINE

**Kills & Prevents  
Tough Weeds**

*Elimina y previene las malezas resistentes*

### Kills other listed weeds.

Keep out of reach of children

**CAUTION**

See back booklet for additional  
Precautionary Statements & First Aid

Manténgase fuera del alcance de los niños

**PRECAUCIÓN**

Consulte el folleto atrás para conocer los avisos  
de precaución adicionales y los primeros auxilios

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.



A vibrant field of yellow Black-eyed Susans (Rudbeckia hirta) in full bloom. The flowers have bright yellow petals and dark brown, textured centers. They are growing on green stems with serrated leaves. In the background, a multi-story red brick building with many windows is visible under a blue sky with scattered white clouds. A large, solid orange question mark is superimposed over the center of the image, partially obscuring the flowers and the building.

Questions