

# Postemergence Weed Control

✦ Labor



# Hand Weeding and Hoeing

- ✦ Seedling weeds controlled

- ✦ Not effective for established perennial weeds



# Postemergence Herbicides

✦ Selective – controls some weeds not others

- ◆ Grass control (Graminicides)

- ◆ Sedges

- ◆ Broadleaf weeds

✦ Non-selective – controls or damages most species

# POST grass control



✦ Selective control of most grasses in most ornamental beds

✦ “Over the top” applications



# Postemergence Graminicides – 4 Selective Options –

## ✦ Aryloxyphenoxy propionate (FOPS)

- ◆ fenoxaprop (Acclaim) – mainly for turf
- ◆ fluazifop (Fusilade & Ornamec)

## ✦ Cyclohexanedione (DIMS)

- ◆ Sethoxydim (Segment)
- ◆ Clethodim (Envoy)

# Acclaim (fenoxaprop-ethyl)

- ✦ Primarily used for crabgrass control in fescue lawns
- ✦ Also effective for Japanese stiltgrass
- ✦ Safe over most broadleaf ornamentals but not widely used in beds
- ✦ Not particularly effective on bermudagrass or other perennial grasses – duh, its used in lawns!



# Crabgrass Control

- Any of the POST graminicides will work.
- Segment > Fusilade = Envoy > Acclaim

Early applications work better



# Perennial grass control: Fusilade = Envoy > Vantage



J. Neal

bermudagrass



J. Neal

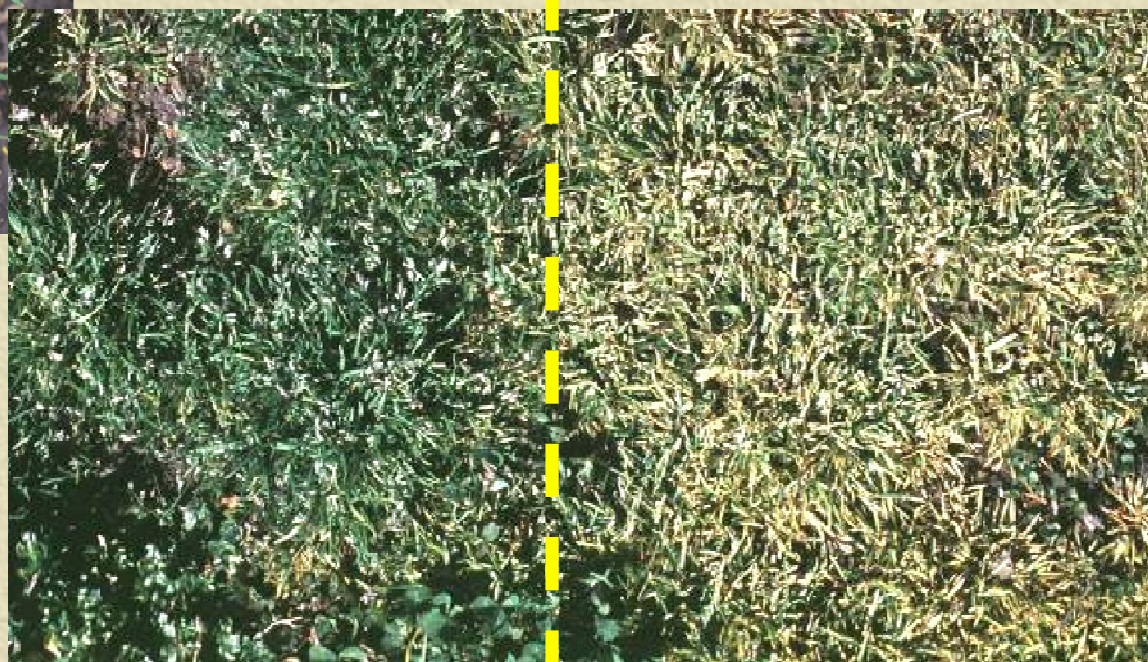
johnsongrass



- Envoy is the only POST graminicide that controls annual bluegrass



R. Uva



Un-Treated

Treated

Landscape Weed Control – JC Neal, NCSU

# POST Graminicide Safety on Ornamentals

Ornamental	Acclaim	Fusilade	Envoy	Vantage
Junipers	Dir*	Dir*	OT	OT
Bar Harbor Jun.	No	No	OT	OT
Azalea	OT	Dir*	OT	OT
Vinca minor	OT	OT	ot	OT
Begonia	OT	OT*	ot	OT
Pansy	?	?	OT	OT*
Blue fescue	OT	No	No	OT

OT= Over the Top; Dir = Directed appl.; \* = on certain varieties

# POST Graminicides Can Injure Ornamentals

Fusilade injures Bar  
Harbor juniper



Vantage on  
Birch – young  
spring buds

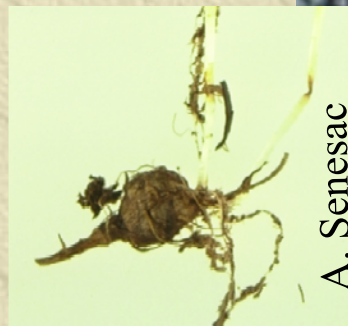
# Yellow and Purple Nutsedges (*Cyperus* spp.)

- ✦ Grass-like, but “Sedges have edges” – triangular “stems”
- ✦ Leaves emerge 3-ranked
- ✦ Spread by rhizomes and over-winter as tubers
- ✦ Tubers often introduced in top soil

Will Cover Sedge Control in the next lecture



J. Neal



A. Senesac

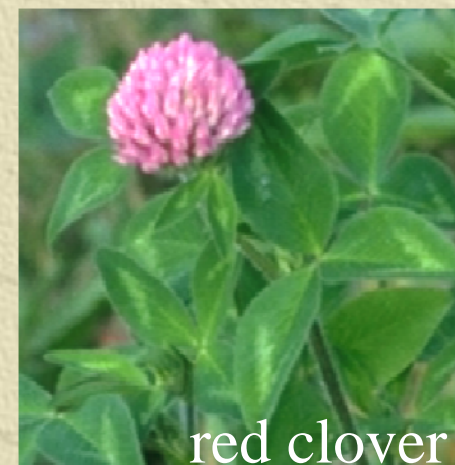
# Postemergence Broadleaf Weed Control



## ✦ Selective: Few Options

- ✦ Lontrel, Basagran, Goal, Casoron, Image, Asulox
- ✦ Generally not very useful in landscapes except....

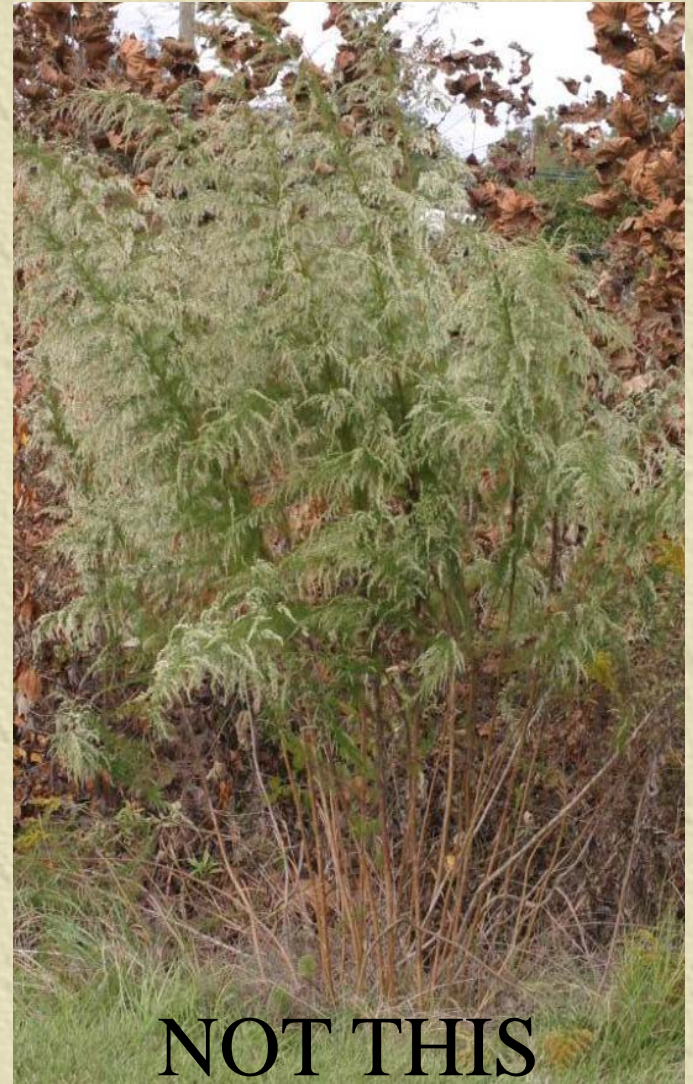
# Lontrel controls legumes and asters



# Lontrel works best on young actively growing weeds

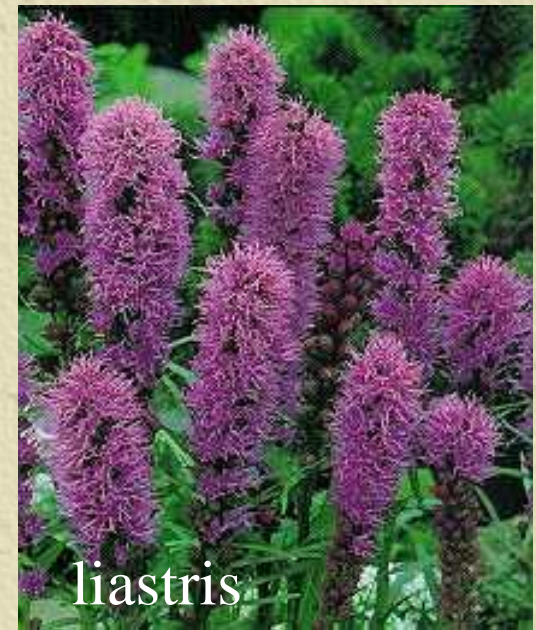


**THIS**



**NOT THIS**

# Avoid Lontrel applications near Asters & Legumes





# Casoron or Barrier (diclobenil)

- ✦ POST and PRE control of many perennial weeds and winter annuals
- ✦ Positional selectivity (basically non-selective)
- ✦ Use **ONLY IN THE WINTER**

# Casoron controls perennial weeds but can kill many ornamentals



# Casoron injures many ornamentals.

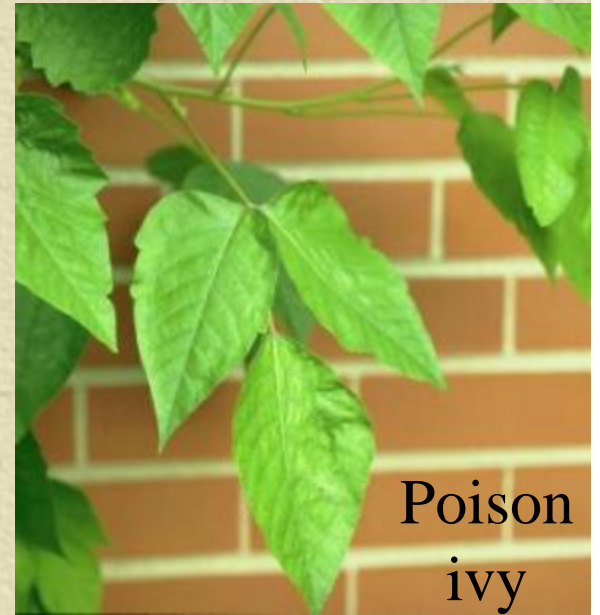
- ✦ Safe on many deciduous trees and shrubs
- ✦ Kills herbaceous ornamentals and some conifers
- ✦ Symptoms often start with marginal chlorosis



# Triclopyr – Brush-B-Gon, Poison Ivy / Oak Killer, etc

- ✦ Active ingredient: triclopyr  
(same as Garlon 3A)
- ✦ Woody weed control
- ✦ Synthetic auxin (labeled for  
broadleaf weed control in turf)
- ✦ Caution around ornamentals

# Triclopyr works better on woody weeds than Roundup



## Triclopyr, cont.

- ✦ Foliar spray in spring better than fall – BUT
- ✦ Works most times of the year
- ✦ Also labeled for cut-stump applications

# triclopyr

- ✦ Treat freshly cut stumps
- ✦ Also can be used as a basal bark spray (usually in oil)



BASF Corp.

# Non-Selective Herbicides

- ✦ Kills most any plant it contacts

- ✦ Contact (not systemic)

  - ◆ Scythe

  - ◆ Reward (diquat)

- ✦ Systemic (translocated in plants)

  - ◆ Finale (glufosinate)

  - ◆ Glyphosate – many formulations

<http://www.ces.ncsu.edu/depts/hort/hil/pdf/hil-648.pdf>



# What do they have in common?

- ✦ No soil residual – POST only
- ✦ Non-selective – damage most any plants they contact

# What is different?

- ✦ Contact vs. Systemic (translocated)

- ✦ This impacts the kinds of weeds controlled –  
annual vs. perennial

- ✦ Speed of action

- ✦ Cost

# Contact vs Systemic

- ✦ Contact herbicides –  
Do not translocate



Contact herbicide spray drift

- ✦ Systemic herbicides  
translocate from the  
site of application to  
the “target site” (roots,  
shoots, etc.)

Glyphosate  
translocates  
to new  
growth



## Scythe (*pelargonic acid*)

- ✦ Nonselective, Contact herbicide
- ✦ Rapid (within hours)
- ✦ Effective on seedling annuals
- ✦ Top kill only on perennials and larger established annuals
- ✦ Odor can persist for days
- ✦ Eye & skin irritant

# Scythe

✦ Contact  
burn

✦ Fast –  
within 30  
min on a  
sunny day



# Reward (*diquat*)

- ✦ Nonselective, Postemergent
- ✦ Contact type -- Not translocated
- ✦ Rapid response -- symptoms are visible within 24 hours
- ✦ No soil residual
- ✦ Effective on seedling annual weeds
- ✦ Top kill only on perennials or larger annuals

# Reward – contact burn symptoms in a few hours to a day



# Finale (glufosinate)

- ✦ Nonselective, Postemergent
- ✦ Systemic (translocated)
- ✦ Rapid response -- symptoms are visible within 48 hours
- ✦ No soil residual
- ✦ Effective on annual & perennial weeds
- ✦ Not as well translocated as Roundup-Pro



# Finale – symptoms in 48 hr



translocated as  
well as  
Roundup



Finale



Roundup Pro

# Glyphosate (Roundup, Touchdown and many others)

- ✦ Postemergence, non-selective control of annual and perennial weeds
- ✦ Systemic (translocated)
- ✦ No soil residual
- ✦ Be careful around conifers with the new formulation



# Roundup-Pro & others

- ✦ active ingredient: glyphosate
- ✦ non-selective, postemergent
- ✦ systemic (translocated)
- ✦ No soil residual
- ✦ Not toxic to humans or wildlife
- ✦ Fish may be injured by the surfactant

# Glyphosate products

## ✦ Isopropyl amine salts

- Roundup, Roundup-Pro
- Generics: Glyfos, Glyflo, Glystar, Glyfomax, Target, Razor, the list goes on ....

## ✦ Diammonium salt: Touchdown-Pro

## ✦ Differences? Slight.

# Quick-Pro (glyphosate + diquat)

- ✦ Rapid action, plus systemic kill of annual weeds
- ✦ ??? Will this reduce activity on creeping perennials??? Probably.
- ✦ Popular with many landscapers

# Guidelines for using glyphosate

- ✦ Annual weeds – ½ to 1 % by volume
- ✦ Perennial weeds 2 to 4% by volume
- ✦ Timing for Perennial weeds
  - ◆ Deciduous – late summer early fall
  - ◆ Herbaceous – late summer early fall
  - ◆ Evergreen – Spring, new growth
  - ◆ Grasses – “boot” state = early flowering

# Optimum timing for Glyphosate

Weed Species	% Solution	Suggested application timing for best control
Perennial grasses	1-2%	At boot stage (first indication of flowering)
Mugwort	2%	late summer / E. Fall
Poison ivy	2%	~ full bloom (E. summer)
Trumpet creeper	2%	Late summer / E Fall
Greenbriar	3%	early spring (5 leaves)
English ivy	2%	2-3 new leaves (E. spring)



# Over 36 glyphosate products on the market

- ✦ Roundup, Roundup-Pro, Quick-Pro, etc
- ✦ Generics: Glyfos, Glyflo, Glyfomax, Target, Razor, ....
- ✦ Diammonium salt: Touchdown-Pro
- ✦ Differences? Slight.
- ✦ Roundup + diquat or Scythe: rapid burn down *may* reduce efficacy on perennial weeds

Roundup injury –  
severity depends on  
species and season of  
application



Deciduous plants – greater  
damage in late summer /  
Fall

Conifers more sensitive in  
spring



# Don't walk through the roundup



# Don't drag the hose through the Roundup



# Using glyphosate without injuring ornamentals



# Selective methods for using non-selective herbicides

✦ Directed applications

✦ Wipers

✦ Clippers:

# Selective Methods for Applying Non-Selective Herbicides

✦ Directed  
applications:  
spray to the base  
of the crop,  
avoiding contact  
with foliage and  
green stems



# Selective Methods for Applying Non-Selective Herbicides

## ✦ Directed applications:

✦ Wipers: rope, paint roller, or sponge type devices. Just wipe the weeds when they are taller than the ornamentals





# Selective Methods for Applying Non-Selective Herbicides

- ✦ Directed applications
- ✦ Wipers
- ✦ Clippers: wet clippers in Roundup-Pro and clip the weed



# Nonselective Alternatives to Herbicides

- ✦ Vinegar – contact type herbicide action
- ✦ Flame weeders – almost as effective as contact herbicides. OK for hardscapes, not pine straw!!!!



# Hot Foam & Steam



- ✦ Contact kill
- ✦ 3+ x cost of herbicide
- ✦ Equipment costs high (\$40,000)

Waipuna Hot Foam Weed Control

- ✦ Contrast selective vs. non-selective.
- ✦ Contact vs. systemic
- ✦ On what types of weeds would you use Garlon instead of glyphosate?
- ✦ On what types (families) of weeds is Lontrel particularly effective?
- ✦ Name a few common ornamental species that are likely to be injured by Lontrel.

- ✦ What kinds of weeds is Casoron used to control?
- ✦ Name at least 3 species that Casoron controls.
- ✦ Name three reasons Casoron is not more widely used.

- ✦ List the 4 selective graminicides
- ✦ What postemergence graminicide controls annual bluegrass?
- ✦ In a ground cover juniper bed what postemergence graminicides would you NOT use and why?
- ✦ When is the optimum time to treat bermudagrass with Fusilade?
- ✦ Which postemergence graminicides provides the best control of crabgrass?

✦ Compare and contrast the Scythe, Reward, Finale and Roundup-Pro. Aspects of comparison should include behavior in soil, contact vs systemic, relative effectiveness on annual and perennial weeds, how rapidly symptoms are expressed.

✦ What is the optimum timing (season or growth stage) of glyphosate applications on the following weeds: Bermudagrass, Mugwort, Catbriar (green briar), Japanese

✦ In general, when is the best time to treat (with glyphosate):

- ◆ a. An herbaceous perennial that dies back to the ground in the fall.
- ◆ b. An evergreen woody weed.
- ◆ c. A deciduous woody weed.
- ◆ d. A perennial grass

✦ Describe three ways we "selectively" use non-selective herbicides such as glyphosate.



- ✦ What types of weeds will vinegar and flame weeders control?
- ✦ What types of weeds will they not control?
- ✦ How would you categorize hot-foam or steam weeders? Systemic or contact? Selective or non-selective.