Postemergence Weed Control

🎉 Labor

Well, it looked like a weed to me

Oops
Hand Weeding and Hoeing

- Seedling weeds controlled
- Not effective for established perennial weeds
Postemergence Herbicides

- Selective – controls some weeds not others
  - Grass control (Graminicidies)
  - 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 Graminicidies
– 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

bermudagrass

johnsongrass
Envoy is the only POST graminicide that controls annual bluegrass.
POST Graminicide Safety on Ornamentals

<table>
<thead>
<tr>
<th>Ornamental</th>
<th>Acclaim</th>
<th>Fusilade</th>
<th>Envoy</th>
<th>Vantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junipers</td>
<td>Dir*</td>
<td>Dir*</td>
<td>OT</td>
<td>OT</td>
</tr>
<tr>
<td>Bar Harbor Jun.</td>
<td>No</td>
<td>No</td>
<td>OT</td>
<td>OT</td>
</tr>
<tr>
<td>Azalea</td>
<td>OT</td>
<td>Dir*</td>
<td>OT</td>
<td>OT</td>
</tr>
<tr>
<td>Vinca minor</td>
<td>OT</td>
<td>OT*</td>
<td>ot</td>
<td>OT</td>
</tr>
<tr>
<td>Begonia</td>
<td>OT</td>
<td>OT*</td>
<td>ot</td>
<td>OT</td>
</tr>
<tr>
<td>Pansy</td>
<td>?</td>
<td>?</td>
<td>OT</td>
<td>OT*</td>
</tr>
<tr>
<td>Blue fescue</td>
<td>OT</td>
<td>No</td>
<td>No</td>
<td>OT</td>
</tr>
</tbody>
</table>

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
Postemergence Broadleaf Weed Control

Selectives: 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

- Locust
- Red bud
- Daisy
- Mimosa
- Liatris
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)
Non-Selective Herbicides

- Kills most any plant it contacts
- Contact (not systemic)
  - Scythe
  - Reward (diquat)
- Systemic (translocated in plants)
  - Finale (glufosinate)
  - Glyphosate – many formulations

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

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

Contact herbicide spray drift

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

Roundup Pro

Finale

Landscape Weed Control – JC Neal, NCSU
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 – $\frac{1}{2}$ 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

<table>
<thead>
<tr>
<th>Weed Species</th>
<th>% Solution</th>
<th>Suggested application timing for best control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perennial grasses</td>
<td>1-2%</td>
<td>At boot stage (first indication of flowering)</td>
</tr>
<tr>
<td>Mugwort</td>
<td>2%</td>
<td>late summer / E. Fall</td>
</tr>
<tr>
<td>Poison ivy</td>
<td>2%</td>
<td>~ full bloom (E. summer)</td>
</tr>
<tr>
<td>Trumpetcreeper</td>
<td>2%</td>
<td>Late summer / E Fall</td>
</tr>
<tr>
<td>Greenbriar</td>
<td>3%</td>
<td>early spring (5 leaves)</td>
</tr>
<tr>
<td>English ivy</td>
<td>2%</td>
<td>2-3 new leaves (E. spring)</td>
</tr>
</tbody>
</table>
Over 36 glyphosate products on the market

- Roundup, Roundup-Pro, Quick-Pro, etc
- Generics: Glyfoso, Glyfloe, 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

 hü Vinegar – contact type herbicide action
 hü 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.