Tough to Kill Weeds

- Perennial weeds
- Vines (annual and perennial)
- Controlled only at certain growth stages
- Weeds not controlled by glyphosate

Perennial weeds reproduce by:
- Seeds
- Tubers
- Bulbs
- Stolons
- Rhizomes

Weedy Vines

- Cannot selectively spray
- Difficult to hand remove

Ivyleaf Morningglory
*Ipomoea hederacea*

- Hard to control summer annual vine
- Germinates early summer
- Butterfly-shaped cotyledons
- Deeply 3-lobed, alternate leaves

Virginia creeper

Optimum timing to treat with glyphosate

<table>
<thead>
<tr>
<th>Weed Species</th>
<th>% Solution</th>
<th>Suggested application timing for best control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trumpet creeper</td>
<td>1.5%</td>
<td>Late summer to early fall</td>
</tr>
<tr>
<td>Virginia creeper</td>
<td>1%</td>
<td>Late summer to 1st fall color</td>
</tr>
<tr>
<td>Poison ivy</td>
<td>2%</td>
<td>~ full bloom (E. summer)</td>
</tr>
<tr>
<td>Mugwort</td>
<td>2%</td>
<td>Late summer to early fall</td>
</tr>
<tr>
<td>Japanese knotweed</td>
<td>2%</td>
<td>Late summer to early fall</td>
</tr>
<tr>
<td>Greenbrier</td>
<td>3%</td>
<td>Early spring (5 leaves)</td>
</tr>
</tbody>
</table>

Pokeweed
*Phytolacca americana*

- Seed-propagated perennial
- Not well controlled by glyphosate
- Poisonous but edible if prepared correctly
Controlling Hard to Kill Weeds

- Sanitation – prevent introduction and spread
- Select the right tools – herbicides or other options
- Treat at the best time
- Don’t give up. Most of these weeds require multi-year efforts

Vetches

*(Vicia spp.)*

- Winter annuals (some perennial species)
- Relatively difficult to control (hand weeding is difficult)
- Germinate in fall or early spring
- Climbs by tendrils

Ivyleaf Morningglory

*Ipomoea hederacea*

- Hard to control summer annual vine
- Germinates early summer
- Not well controlled by most PRE and by glyphosate

Tough to control annual weeds

- Vetch:
  - PRE with Snapshot, Broadstar, Sureguard
  - POST – Finale, Lontrel (glyphosate on young plants)
- Morningglory
  - PRE – Sureguard, Broadstar, Surflan
  - POST – glyphosate or hand weed young plants

Controlling annual weeds

- Mulch
- Select the best preemergence herbicide for the site
- Sanitation!!! Keep them from going to seed.

Dodder

*(Cuscuta spp.)*

- Parasitic annual
- Yellow to orange vining stems
- Seed propagated
Dodder control

- Sanitation!!!
- Prevent introduction
- Remove plants before they flower
- Don’t try to hand weed just the dodder – remove the host too!
- Plant resistant ornamentals
- Few PRE herbicides -- Dacthal

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

***Controlling nutsedges in landscape plantings – HIL-647***

Yellow Nutsedge (Cyperus esculentus)

- Perennial with rhizomes and tubers
- Emerge in late spring; die in the fall
- “Daughter” plants and tubers formed at tips of rhizomes
- One plant can form as many as 6000 tubers

Purple Nutsedge (Cyperus rotundus)

- Rhizomatous and tuberous perennial
- Emerge in mid-spring; die in the fall
- Forms tubers within 6 weeks of emergence
- Very hard to control
- The “world’s worst weed”

Yellow vs. Purple – Leaf tips

Yellow nutsedge leaf tips taper to a long, narrow point
Purple nutsedge leaf tips are pointed but not tapered

Yellow vs. Purple -- Flowers

Purple Nutsedge
- Purple or reddish brown turning black

Yellow Nutsedge
- Yellow fading to tan
Yellow nutsedge control

- Preemergence suppression with Pennant Magnum, Tower or Freehand
- Selective POST control with Basagran TO or Sedgehammer
- POST control with Roundup or Finale

Pennant Magnum EC (metolachlor)

- PRE yellow nutsedge and annual grass control
- Only available as an EC
- Apply Pennant EC before bud-break (to avoid foliar injury)
- ~2 to 3 months residual. Re-apply as directed spray

Tower EC (dimethenamid-p)

- PRE yellow nutsedge, annual grass and certain broadleaf weeds
- EC formulation
- Apply before bud-break (to avoid foliar injury)
- ~2 to 3 months residual. Re-apply as directed spray

Freehand 1.75G (dimethenamid-p + pendimethalin)

- Preemergence control of annual grasses and small seeded broadleaf weeds
- Suppression of yellow nutsedge
- Safe on most woody ornamentals
- Herbaceous plants ??? Still testing.

EC herbicide injury to tender spring growth

- Tower injury 1 WAT
- Pennant Magnum injury 1 WAT

PRE control of Purple nutsedge?

- Nothing!

New for 2008
POST Yellow Nutsedge Control

- **Basagran TO**: directed applications to most woody ornamentals (except taxus, sycamore & rhododendron)
- **Sedgehammer**: directed applications around woody ornamentals

  Both control some broadleaf weeds => also injure ornamentals if applied over the top

Basagran TO (bentazon)

- Controls yellow nutsedge and annual sedges
- Not effective on Purple nutsedge or kyllinga
- Also controls many seedling broadleaf weeds incl. dayflower, smartweed, ragweed, & pigweed

Sedgehammer (halosulfuron)

- Selective Post control of sedges
  - yellow & purple nutsedge
  - annual sedges
  - certain kyllinga species
- Apply to young nutsedge; reapply in 6 weeks (soil residual prevents nutsedge emergence for ~ 4 weeks)

Sedgehammer (halosulfuron)

- Safe on turf
- Directed applications around woody ornamentals
- Injury to contacted foliage
- Injury to taxus, Rhododendron & arborvitae

Purple Nutsedge Control

- **NOT** preemergence or Basagran
- Sedgehammer will require 3 applic. at ~4 to 6 week intervals
- Image (imazaquin) injures many ornamentals and is not recommended.
Image (imazaquin)
- Pre and Post control of yellow and purple nutsedge in warm-season turf and around SOME woody ornamentals
- Treat in late spring and re-treat 6 weeks later and again if needed
- SEVERE DAMAGE to non-labeled woody ornamentals such as river birch, azalea, leyland cypress, viburnum, ligustrum…
- Foliar and Root Uptake

Why bother?
- Image causes significant injury to ornamentals from root uptake
- Basagran & Sedgehammer must be applied as directed sprays
- So why not just use Roundup or Finale????

Selective Methods to Use Non-Selective Herbicides
- Directed applications:
  - Wipers: rope, paint roller, or sponge type devices. Just wipe the weeds when they are taller than the ornamentals

Other Options:
- Roundup & Finale -- Repeat applications when new growth is observed
- Tank mix with Sedgehammer for residual control? (controls weeds faster than Sedgehammer alone)

Hard to control Weeds, cont.
Perennial broadleaf weeds
- Mugwort
- Florida betony
- Bamboo
- Dollarweed
- Woody weeds
Mugwort or Chrysanthemum Weed (*Artemisia vulgaris*)

- Perennial with rhizomes

**Mugwort Control**
- Roundup-Pro in May and August for two years
- Lontrel in May is somewhat effective but needs to be reapplied whenever new growth is present
- Casoron provides temporary control but needs to be paired with August Roundup

Pennywort or Dollar Weed (*Hydrocotyle* spp.)

- Spreading perennials
- Several species
- Spread by stolons, rhizomes, seed, and occasionally by tubers
- Petiole in the center of the leaf

**Pennywort Control**
- Image applied in the spring. Reapply 6 weeks later
- Image can injure many ornamentals from root uptake so use it only on labeled species
- Roundup is not very effective
- Casoron provides temporary suppression but dissipates by the time pennywort is growing vigorously

Florida Betony (*Stachys floridana*)

- Spreading perennial
- Square stems
- Rhizomes and "rattlesnake" tubers
- Grows fall through late spring -- dormant in the summer

**Florida Betony Control**
- Winter application of Casoron, Two Years in a row.
- Supplement with Roundup-Pro as needed
- Alternative:
  - Roundup-Pro in the spring and fall for two years can provide up to 90% control
  - Treat Turf and Landscape infestations! (but don’t treat the turf with Casoron! Check the turfgrass recommendations.)
Bamboo
- One of the hardest to kill landscape weeds
- Perennial with rhizomes growing to 18 inches depth
- Many native and introduced species
- Grass family

Controlling bamboo
- Multi-year effort is required
- Remove as much of the rhizome mat as possible
- Casoron in the winter followed by Roundup throughout the summer
- Spot spray with Fusilade or Envoy to suppress when above is not possible

Pre/Post Weed Control With Casoron
- Safe on certain established trees & shrubs
- Controls many perennial, hard-to-kill weeds
- Significant potential to injure non-labeled species - including hemlock, fir, & spruce
- Apply in late fall or early winter
- Residual lasts until early summer

Casoron controls perennial weeds but can kill many ornamentals

Perennial weed containment
- Rhizomatous weeds will encroach from adjacent areas
- Control the entire patch OR contain and prevent encroachment
- Vertical barriers can prevent encroachment

Vertical barriers
- Depth – typically 15 inches
- Extend several inches above the ground
- Angle into your property (forcing rhizomes up and over)
- Inspect annually to remove rhizomes
Woody weeds – not well controlled by Casoron or glyphosate

Poison Ivy (Toxidendron radicans)
- Woody vine
- Leaves 3, let it be
- Allergic dermatitis caused by urushiol in all plant parts -- Even dead stems!
- Spread by birds that eat fruit and drop seeds.

Greenbriar or Catbriar (Smilax spp.)
- Several species of semi-evergreen woody vines
- Very hard to control

Japanese Honeysuckle (Lonicera japonica)
- Imported, semi-evergreen, woody vine
- Fragrant and attractive flowers
- Invasive in landscapes and public lands

Oriental Bittersweet (Celastrus orbiculatus)
- Imported woody vine
- Spreading in public lands and landscapes

Woody Weeds
- Deciduous plants: Roundup-Pro in late summer or early fall
- Evergreens: Roundup-Pro in the spring when plants have 2 to 4 new leaves
- Triclopyr (Brush-B-Gone & others) in the spring on new growth. This is a brush killer so use carefully around ornamentals
- Clipper applications with Roundup or triclopyr

- Sharp prickles
- Climbs by Tendrils

- Similar to and displacing native American bittersweet
Selective Methods to Use Non-Selective Herbicides

- **Directed applications**: Avoid spraying green tissues
- **Wipers**: rope, paint roller, or sponge type devices. Just wipe the weeds when they are taller than the ornamentals
- **Clippers**: wet clippers in Roundup-Pro and clip the weed

Do not use Roundup-Pro over ornamentals

Selective Methods to Use Non-Selective Herbicides

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

What to do with vines?

Klip-Kleen Clippers or Dip ‘n Clip

5 to 10% v/v Roundup-Pro or Brush B Gone in water

Clip close to the ground

Works with other systemic herbicides

Controlling Hard to Kill Weeds

- Sanitation – prevent introduction and spread
- Select the right tools – herbicides or other options
- Treat at the best time
- Don’t give up. Most of these weeds require multi-year efforts

Identification and Control of Nutsedges in Landscape Plantings

See Horticulture Information Leaflet Number 647

Study Questions:

1. Describe three strategies for controlling yellow nutsedge in woody landscape plantings:
   (ie: PRE, POST Selective, POST non-selective). Be specific – products, application timing, and frequency of application.
2. Of the herbicides discussed in lecture: which preemergence and postemergence herbicides are effective on:
   - Yellow nutsedge only
   - Yellow nutsedge and purple nutsedge
3. In a planting of annual bedding plants what can be done to control yellow nutsedge?
4. In a planting of annual bedding plants what can be done to control purple nutsedge?
Study Guide Questions

��道推荐的控制选项
- mugwort, Florida betony, and bamboo
- Image is effective pennywort.  Why is it not widely used in landscape beds?
- Optimum time to apply glyphosate for: English ivy, trumpet creeper, Johnsongrass

Study Guide Questions

- Woody weeds are controlled by what two postemergence herbicides?
- Describe three selective ways of using glyphosate for weed control.
- Dodder and morningglory are both summer annual weeds.  How do their control measures differ?  Why?