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 Roundup-Pro

<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 (5. 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
- Germinate in fall or early spring
- Climbs by tendrils

Fabaceae = Legume Family

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?
- Dacthal is back.

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
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 or reddish brown turning black
Yellow fading to tan

Yellow nutsedge control
- Preemergence control 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.

Freehand – weeds controlled

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

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

Basagran TO (bentazon)
- Use 1 to 2 lb ai/A; 2 applications @ 14 day interval.
- Directed applications around woody ornamentals
- Injury reported on Rhododendron, sycamore and taxus
Sedgehammer (halosulfuron)
- Selective Post control of sedges
  - yellow & purple nutsedge
  - annual sedges
  - certain kyllinga species
- Apply to young nutsedge; reapply in 6 weeks

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

Purple Nutsedge Control
- NOT Pennant or Basagran
- Sedgehammer will require 3 applications at ~4 to 6 week intervals
- Image requires 3 applications but injures many ornamentals

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 & Manage must be applied as directed sprays
- So why not just use Roundup or Finale???

Image stunts new growth

Root uptake from directed applications. Plants typically recover in about 8 weeks
Other Options:
- Roundup & Finale -- Repeat applications when new growth is observed
- Biobarrier: Treflan impregnated fabric can hold back purple and yellow nutsedge

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

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?

Hard to control Weeds, cont.
Perennial broadleaf weeds
- Mugwort
- Florida betony
- Bamboo
- Dollarweed
- Bindweed
- Woody weeds

Mugwort or Chrysanthemum Weed (Artemisia vulgaris)
- Perennial w/ 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!
  - If these options are not possible – Fumigate

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

- **Weeds controlled:** most herbaceous perennials and winter annuals including: dandelion, red sorrel, clover, mugwort, Fl. Betony, etc.
- **Weeds suppressed:** bindweed, nutsedge, quackgrass, and other perennial grasses
- **Weeds not controlled:** most woody weeds such as black locust sprouts, mulberry, catbriar, brambles and late germinating summer annuals
- Apply in late fall or early winter *****

Postemergence Herbicide Use Sites

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Tree &amp; Shrub beds</th>
<th>Ground-covers</th>
<th>Annual Flowers</th>
<th>Perennials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casoron</td>
<td>✓</td>
<td>Few</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Diquat</td>
<td>directed</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Finale</td>
<td>directed</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Roundup</td>
<td>directed</td>
<td>Wiper</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Syste</td>
<td>directed</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Goal/Changra</td>
<td>directed</td>
<td>Few</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Fusilade, Exovy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Hedge Bindweed

*Calystegia sepium*

- White morningglory-like flowers & triangular leaves
- Herbaceous perennial
- Trailing vining stem
- Spreads by creeping roots
- Sprouts from rhizomes in early spring
Bindweed Control
- Herbaceous perennial: late summer is optimum time to apply Roundup-Pro.
- Multiple years treatment will be required
- Casoron provides suppression through early summer
- Lontrel not very effective

Biobarrier: An Alternative?
- Geotextile fabric impregnated with trifluralin
- Prevents most weeds from growing through the fabric

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

Similar to and displacing native American bittersweet

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

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

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