

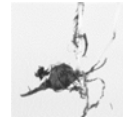
Tough to Kill Weeds

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

Perennial weeds reproduce by:



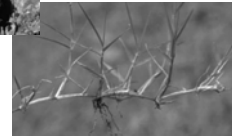
Bulbs



Tubers



Seeds



Stolons



Rhizomes

Weedy Vines

- ✱ Cannot selectively spray
- ✱ Difficult to hand remove



Virginia creeper

Ivyleaf Morningglory *Ipomoea hederacea*



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



Optimum timing to treat with Roundup-Pro

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

Pokeweed *(Phytolacca americana)*

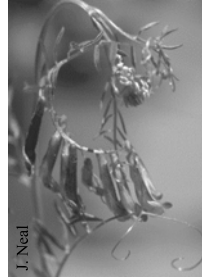


- ✱ Seed-propagated perennial
- ✱ Not well controlled by glyphosate
- ✱ Poisonous but edible if prepared correctly

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.)



Fabaceae = Legume Family



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

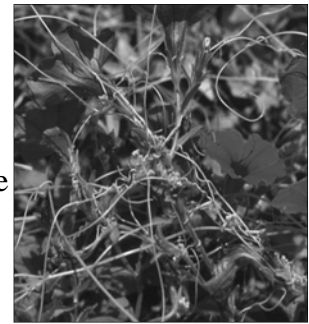
Controlling annual weeds

- ✳ 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

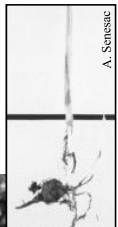


Dodder control

- ✳ 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.

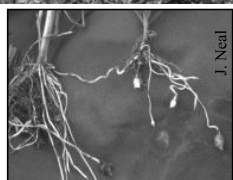
Yellow and Purple Nutsedges (*Cyperus* spp.)

- ✳ 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



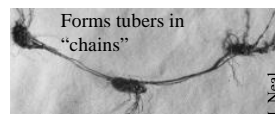
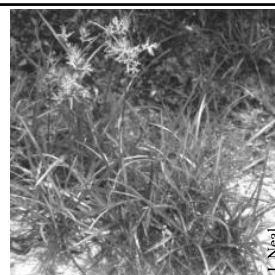
Yellow Nutsedge (*Cyperus esculentus*)

- ✦ 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



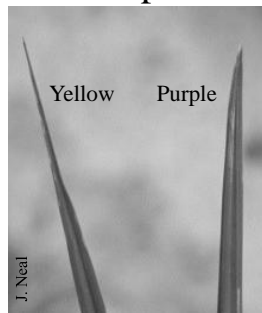
Purple Nutsedge (*Cyperus rotundus*)

- ✦ 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”



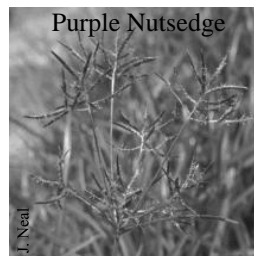
Yellow vs. Purple – Leaf tips

Yellow nutsedge leaf tips taper to a long, narrow point

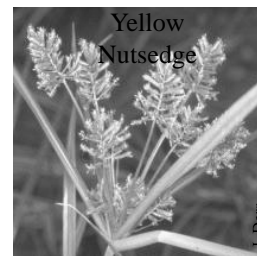


Purple nutsedge leaf tips are pointed but not tapered

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 applic. 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

Image stunts new growth



Root uptake from directed applications. Plants typically recover in about 8 weeks

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????

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



Biobarrier: An Alternative?

- ✱Geotextile fabric impregnated with trifluralin
- ✱Prevents most weeds from growing through the fabric



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*)



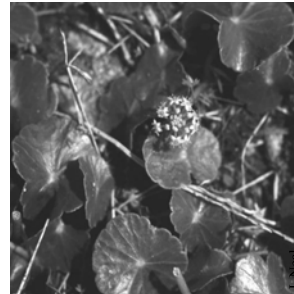
- ✱Perennial w/
rhizomes



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

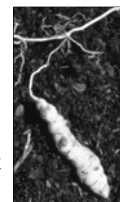
Pennywort Control

- ✖ 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

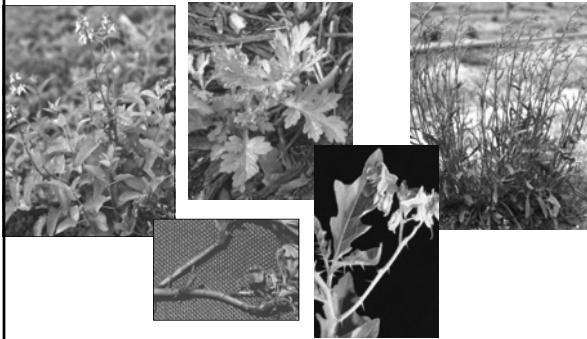
Controlling bamboo

- ✳ 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



Casoron (diclobenil) cont.

- ✳ 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

Herbicide	Tree & Shrub beds	Ground-covers	Annual Flowers	Perennials
Casoron	✓	Few	No	No
Diquat	directed	No	No	No
Finale	directed	No	No	No
Roundup	directed	Wiper	No	No
Scythe	directed	No	No	No
Goal / Basagran	directed	Few	No	No
Fusilade, Vantage, Envoy	✓	✓	✓	✓



White morningglory-like flowers & triangular leaves

Hedge Bindweed *Calystegia sepium*



- ✳ 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

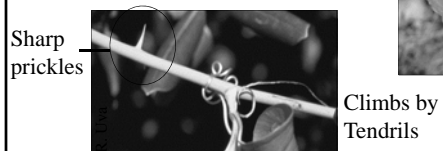
(*Toxicodendron radicans*)

- ✳ 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

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