Florida Landscape Weeds and Mulch

Keys to Improving Landscape Weed Management



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Why is weed control so critical?

- $500 million in losses in Florida agriculture
- 75% of all pesticide sales are from herbicides
- Unique challenges in Landscapes:
  - Must control weeds to reduce competition
  - Aesthetics are *critical*



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WHAT IS A "WEED"?






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ANY PLANT OUT OF PLACE!

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"Plants for which their virtues have not been discovered" ---Ralph Waldo Emerson

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What does this mean in terms of control?

- Many problematic weed species may not be in identification books, websites, etc.
- "Ag" weeds can occur in turf; "Turf" weeds can occur in ornamentals, etc. etc.

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Why does ID Matter?

- First step in IPM program is IDENTIFICATION
- Gives you the ability to use:
  - Efficacy tables
  - Herbicide label information
  - University/Industry recommendations
- Most weeds people have questions about are the most difficult to control
- Many weed species are “indicator weeds”


Low pH: Red Sorrel


High pH: Broadleaf plantain


Compaction: Goosegrass


Low N: clovers, legumes


Wet sites: Sedges, doveweed, eclipta, dollarweed


Nematodes: Florida pusely, spurges


Low mowing: Poa, chickweed

More serious situations…


Pokeweed


Creeping indigo

Know your enemy:

Most valuable weed control tools:

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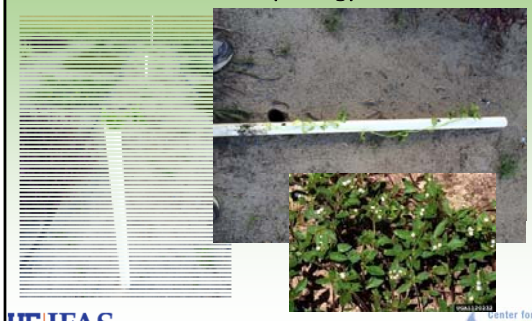
How does habitat, cultural practices impact morphology?



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Common Uncommon Weeds

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Parietaria floridana (Florida pellitory)

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Pectis prostrata (Spreading chinchweed)

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Pilea microphylla (Artillery weed)

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Drymaria cordata (West Indian chickweed)

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Cuscuta spp. (Dodder)

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Parthenium hysterophorus (Ragweed parthenium, Whitetop)

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Commelina benghalensis (Bengal Dayflower, Tropical Spiderwort)

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Paederia foetida (Skunkvine)

Image credit: M.A. Garland, Hillsborough Co.

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Stumped?

- **Collect a plant sample**
  - **The more the better**
  - **Flowers if possible**
  - **Different stage of growth**
- **Store in plastic bag, wet paper, cool location**
- **Take to extension offices, REC's**
  - **MREC Plant Clinic – Every Tuesday, Apopka, FL**

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Taking Good Photos for ID

- Overall growth habit
- Closeups:
  - Leaf shape, stems, root system
  - Seeds, flowers
  - Include information on location/site where collected
  - Possibly something in photo to show scale:
    - Quarter, keys, pencil, etc.
  - Solid background if in crowded area (truck hood, paper, notepad, etc.)

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Good Photos

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Good Photos

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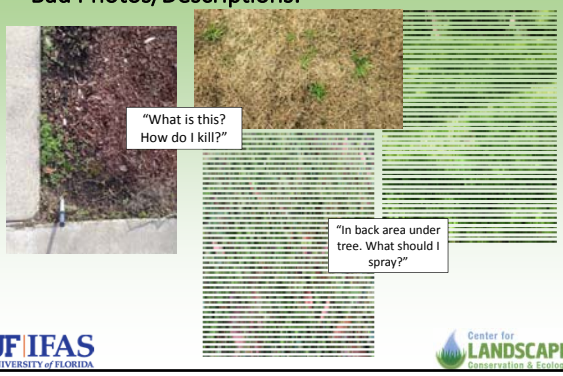
Bad Photos/Descriptions:



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How can you control weeds in your landscape?

Non-chemical methods

- Mulching
- Plant selection/placement – weeds fill voids
- Cultural practices – mowing, watering, fertilizing
- Handweeding – sometimes it is easiest method
- Sanitation – see weed, pull weed

Chemical methods

- Preemergence herbicides – prevent germination
- Postemergence herbicides – existing weed problems

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Remember…weeds fill in voids

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Landscape Weed Control

- Mulch is cornerstone of great weed control programs
  - Use coarse textured mulches at 2 to 3 in. thick
    - Will control annual weeds better than perennials
  - Fine textured organic materials can ***promote*** weed growth

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How mulch works to control weeds…

1. **Light exclusion** – many annual weed species need high light levels to germinate
2. **Reduce available air and water** in seedbed (coarse-textured particles dry out quicker and keep moisture on soil surface)
3. **Creation of physical barrier**
4. **Allelopathic** chemical leaching in rare cases

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Mulch types: Organic

- **Pinebark**
- **Pinestraw**
- **Leaves/grass clippings**
- **Melaleuca mulch**
- **Mixed hardwood mulch**
- **Eucalyptus mulch**
- **Utility mulch**

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Which is the best/most cost effective?

"Cost and effectiveness of weed control practices in the landscape"

- Goal: Determine annual cost of weed control
- Variables: Mulch type, plant species, herbicide use
- Two sites (GCREC, MREC)

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Methods

Treatments

1. Pinestraw
2. PB nuggets
3. Herbicide (Snapshot® TG)
4. Pinestraw + Herbicide
5. Pinebark + Herbicide
6. Control (no mulch/herbicide)

*all mulch at 2 in. depth; plots 5' x 5'

Data Collection

Bi-weekly:

- % cover ratings (0 – 100%) – all weeds
- Predominate species/treatment
- Mulch depth

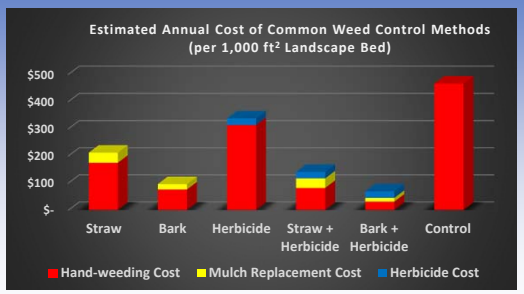
If mulch <2 in. or % control >20%:

- Plots hand weeded – recording time
- Mulch added – recording volume

Installation Cost

INSTALLATION COSTS		
Treatment	**Cost per plot (25ft²)**	**Cost per 1000 ft²**
Pinestraw	$2.81	$112.40
Pinebark	$6.20	$248.00
Herbicide	$0.20	$8.00
Pinestraw + Herbicide	$3.01	$120.40
Pinebark + Herbicide	$6.40	$256.00
Control (Bare soil)	$0.00	$0.00

Results



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Other applications….

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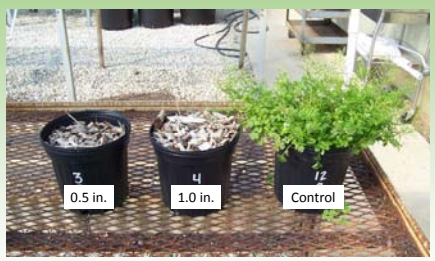
Privet mulch….



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Other trials…

- 1 in. layer PB provided 90% control of eclipta, 87% control spotted spurge (Cochran et al. 2009)
- 3 in. layer of PB provided 5 months control of bittercress (Richardson et al. 2008)
- Pinebark, hardwood, cedar, longleaf pinestraw and short leaf pinestraw all provided at least 50% reduction in weeds (Skroch et al. 1982)
- No difference in 15 different organic mulches when all applied at the same depth (Stinson et al., 1990)

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Other trials…

- Organic mulches applied at approximately 3 in. provided best weed control (Chalker-Scott, 2007)
- Fine-textured, nutrient dense mulches increased weed seed germination (Maynard, 1998)

Bottom line: Coarse textured particles, 2 to 3 inches provide excellent control of *annual* weeds

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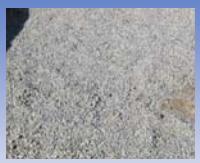
What about inorganic mulch?


Joe Murray, Treebio.com, bugwood.org

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What about inorganic mulch?

- Can be applied at lower depths and provide similar weed control (Winkel et al. 1995)
- Most work well, but more expensive, no organic matter
- Need to also install landscape fabric = $$$$
- Will probably have to periodically remove debris

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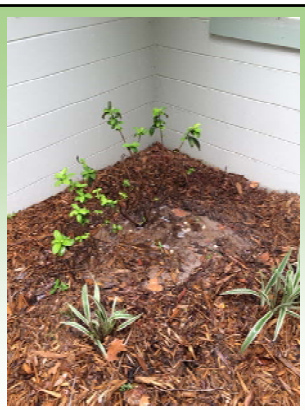

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What about inorganic mulch?

- Landscape fabrics?
  - Typically only short term control (Appleton and Derr, 1989)
  - Ornamentals can root into fabric
  - Little control of perennial weeds (Martin et al. 1987)
  - Some impregnated with herbicide (trifluralin)
- Rubber mulches pose some risks around plants:
  - Zn toxicity
  - Fire hazard
  - Smell
  - Local ordinances

A. Koeser, Int. Soc. Arbor., bugwood.org

Joe Murray, Treebio.com, bugwood.org

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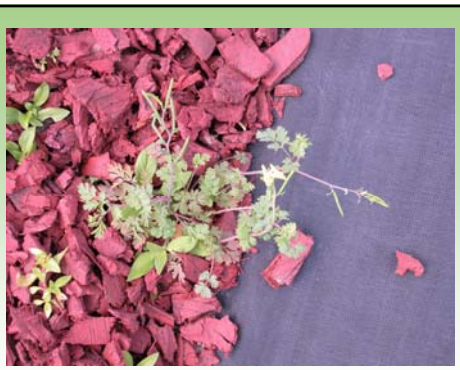

Rubber mulch + landscape fabric

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Marsh parsley rooting through landscape fabric

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Herbicide Mulch Interactions

- Some herbicides can bind to mulch layer, decreasing control
- Coarse textured particles may decrease binding
- Often better to make 1st application below mulch layer
- Research is ongoing on best combinations

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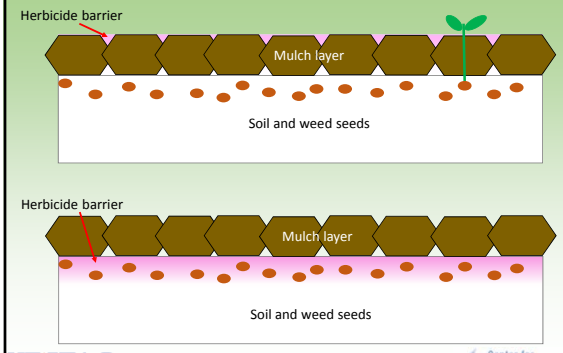
Example of Herbicide Binding:



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Quick keys to using herbicides effectively:

- Read product labels
- Know how long you have to water in preemergence herbicides
- Know that glyphosate can be absorbed through thin barked trees (maples, elms, crape myrtles, etc.)
  - Typically cumulative effect
- Use turf herbicides with caution around ornamentals

Metsulfuron damage to ligustrum

Credit: Celeste White

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Clean your sprayers!

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Will herbicide injured plants recover?

- Very difficult to say…
- Depends on the herbicide, the plant, plant health, time of year, rate, weather, etc.
- Contacts are much more forgiving than systemics
- Recommendations on a case-by-case basis
- Reduce other stresses

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The method that provides 100% control?

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QUESTIONS?

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