Control of Vines and Brush in Natural Areas

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Integrated Pest Management:
Mechanical control
Biological control
Herbicides
Land management practices
Knowledge of pest
Education
Methods Of Herbicide Application

- Hack and Squirt
- Cut Stump
- Foliar
<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Brand Name(s)</th>
<th>Application Method(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imazapyr*</td>
<td>Terrestrial: Arsenal</td>
<td>Foliar, Stump, Hack and Squirt</td>
</tr>
<tr>
<td></td>
<td>Aquatic: Habitat</td>
<td></td>
</tr>
<tr>
<td>Hexazinone</td>
<td>Velpar L, Velpar ULW</td>
<td>Soil</td>
</tr>
<tr>
<td>Glyphosate*</td>
<td>Terrestrial: Roundup</td>
<td>Foliar (+ imazapyr)</td>
</tr>
<tr>
<td></td>
<td>Aquatic: Rodeo</td>
<td>Stump, Hack and Squirt</td>
</tr>
<tr>
<td>Triclopyr amine</td>
<td>Terrestrial: Garlon 3A</td>
<td>Foliar, stump, hack and squirt</td>
</tr>
<tr>
<td></td>
<td>Aquatic: Renovate 3</td>
<td></td>
</tr>
<tr>
<td>Triclopyr ester</td>
<td>Garlon 4</td>
<td>Foliar, stump, hack and squirt</td>
</tr>
<tr>
<td>Metsulfuron</td>
<td>Escort XP</td>
<td>Foliar</td>
</tr>
<tr>
<td>Imazapic</td>
<td>Plateau</td>
<td>Foliar</td>
</tr>
<tr>
<td>Aminopyralid</td>
<td>Milestone</td>
<td>Foliar</td>
</tr>
<tr>
<td>Imazamox</td>
<td>Clearcast</td>
<td>Foliar</td>
</tr>
<tr>
<td>Fluroxypyr</td>
<td>Vista</td>
<td>Foliar</td>
</tr>
</tbody>
</table>

*Generic products available
## Herbicide Behavior in Soil

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Root Uptake</th>
<th>Half-life</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyphosate</td>
<td>None</td>
<td>47 days</td>
<td>Bound</td>
</tr>
<tr>
<td>Hexazinone</td>
<td>High</td>
<td>90 days</td>
<td>High</td>
</tr>
<tr>
<td>Imazapic</td>
<td>Moderate</td>
<td>120 days</td>
<td>Moderate</td>
</tr>
<tr>
<td>Imazapyr</td>
<td>High</td>
<td>25-142 days</td>
<td>Moderate</td>
</tr>
<tr>
<td>Triclopyr</td>
<td>Low</td>
<td>30 days</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
Foliar Applications

• Broadcast or spot treatments
• Application equipment
  – Backpack/handheld sprayer
  – High pressure vehicle mounted
  – Aerial (helicopter)
• Herbicides
  – Glyphosate
  – Triclopyr amine
  – Triclopyr ester
  – Imazapyr
• Surfactants
  – Penetration
  – Spreading
Cut Stump Applications

- Cut as level as possible
- Sweep off sawdust
- Treat as soon as possible
- Concentrate on living tissue
- Use enough herbicide

- Herbicides
  - Glyphosate
  - Triclopyr amine
  - Triclopyr ester
  - Imazapyr
Basal Bark Applications

- **Herbicides**
  - Oil soluble (EC)
    - Triclopyr ester
    - imazapyr
- **Diluents**
  - Vegetable oil
    - Most readily breaks down
  - Mineral oil
  - Diesel fuel not recommended
Hack and Squirt Applications

• Used for trees with thick or scaly bark

• Herbicides
  – Imazapyr
  – Glyphosate
  – Triclopyr amine
  – Triclopyr ester

• Equipment
  – Spray bottles
• Cut all the way around stem
• Cut all the way in to cambium
• Apply herbicide to exposed cambium
• Use dyes
• Treat within 15 minutes of cut
Selective treatments:
1) basal bark, 2) hack and squirt, and 3) cut stump
Some Common and Not-so-Common Invasive Vines and Brush Found in Natural Areas of Florida
Old World Climbing Fern
(Lygodium microphyllum)

"Pops" up in very isolated natural areas

Northern Everglades
Dense Infestation – Jonathan Dickinson S.P., Martin County
Foliar spray

- Low growing, not climbing into canopy

Poodle-cut

- Climbing into canopy
- Cut at 4-5 feet above ground
New growth from spore germination
- Typically takes two treatments to get OWCF cover to < 5%
- Follow-up treatments will be required
Ground Treatments

**Initial Treatment:**
- Glyphosate (1-3% product)
- Metsulfuron methyl (2 oz / 100 gallons)
- Triclopyr (1-3% product)
- Imazapic (1% product)
- Imazamox (?)

**Follow-up Treatments:**
- Use a different herbicide than used in initial treatment
- Tank mixes
- Imazapyr (?)
- Aminopyralid (?)
- Fluroxypyr (?)
Japanese climbing fern  
(Lygodium japonicum)

Herbicides
  Glyphosate
  Triclopyr
  Metsulfuron
Old World Climbing Fern
Once Compound (2-pinnate)

Japanese Climbing Fern
Twice Compound (3-pinnate)
Air potato, winged yam
(Dioscorea bulbifera)
(D. alata)

Herbicides
Glyphosate
Triclopyr
Aminopyralid?
Imazamox?
Skunk vine
(Paederia foetida)

Herbicides
- Glyphosate
- Triclopyr
- Imazapic
- Aminopyralid

Methods
- Foliar
- Basal bark
- Cut stem
Japanese clematis
(Clematis terniflora)

Herbicides
Triclopyr
Glyphosate

Methods
Foliar
Basal bark
Cat’s-claw vine (*Macfadyena unguis-cati*)

**Triclopyr ester** - cut vine, pull away from tree and treat cut surface and bark
Rosary Pea
(*Abrus precatorius*)

- Foliar spray – “dense” infestations
  - glyphosate, triclopyr amine

- Cut – treat base with triclopyr ester

- Collect seed pods
Flame Vine (*Pyrostegia venusta*)

- Cut stems above nodes
- Treat nodes with 10% triclopyr ester
Coral ardisia
(Ardisia crenata)

Foliar
• Triclopyr
• Imazapic
• Triclopyr + Imazapic

Basal bark
• Triclopyr ester (?)
Cerulean flaxlily (*Dianella ensifolia*)

**Foliar spray**
- Imazapyr
- Metsulfuron
Australian Pine
(*Casuarina equisetifolia*)

Basal bark, hack and squirt, or cut stump
- triclopyr ester
Brazilian Pepper
(Schinus terebinthifolius)

Foliar
- Triclopyr
- Imazapyr
- Imazamox (?)
- Metsulfuron (?)

Basal bark
- Triclopyr
- Fluroxypyr
  + Imazapyr

Cut stump
- Triclopyr
- Glyphosate
  + Imazapyr
Model - impacts of invasive plants

![Graph showing the relationship between native and invasive plant cover. The graph indicates a decrease in native plant cover as invasive plant cover increases.]

- **Native Plant Cover (%)** on the y-axis.
- **Invasive Plant Cover (%)** on the x-axis.

- Initial Invasion is marked by a question mark.
- The graph shows a downward trend, indicating a decrease in native plant cover with increasing invasive plant cover.
Invasive Plant Cover (%) vs. Time (?)

- **Eradication possible**
- **Management stage**
- **Eradication unlikely**

Hobbs and Humphries, 1995
Books – available at IFAS bookstore (http://ifasbooks.ifas.ufl.edu/ or 1-800-226-1764)

Websites - management plans, images, publications, law, and lots of other information

http://plants.ifas.ufl.edu/  http://www.fleppc.org/
Source of Range Maps:

University of South Florida Herbarium

Questions