Identification, Management, and Alternative Plants

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**Alternatives**
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**Management**
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**Moderator:** Andy Brand
Tree-of-heaven (*Ailanthus altissima*)
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Tree-of-heaven
(Ailanthus altissima)

MANAGEMENT

- **MECHANICAL** – Cut stems and paint with herbicide (glyphosate).
- **CHEMICAL** – Foliar spray after mid-August with glyphosate. Basal bark application with triclopyr (BEE) mixed in vegetable oil year round.

- **OTHER** – Not treating cut stems with herbicide will result in extensive root suckering.
Tree-of-heaven
*Ailanthus altissima*

- Urban tolerant
- Adaptable to compaction, salt spray, pollution etc.
- Fast (3-5’ annually)
Tree-of-heaven Alternatives

*Acer negundo cvs.*

Boxelder

*Rhus typhina*

Staghorn Sumac
Garlic Mustard
(Alliaria petiolata)
Garlic Mustard (Alliaria petiolata)
Garlic Mustard
*(Alliaria petiolata)*

**MANAGEMENT**

- **MECHANICAL** – Pull plants between flowering and seed maturation.
- **CHEMICAL** – Foliar herbicide application glyphosate during basal stage or triclopyr prior to flowering.
- **OTHER** – Extensive seedbank will require several years of control.
Choice Criteria

• Site Conditions
  – Sun/Shade
  – Dry soils
  – Riparian

• Physical Attribute
  – Flower color
  – Height
  – Growth pattern
Garlic Mustard Alternatives

**Alliaria petiolata**

- *Anemone canadensis* – Canada Wind Flower
- *Eurybia divaricata* - White Wood Aster
- *Eupatorium rugosum* – White Snakeroot
Mugwort \textit{(Artemisia vulgaris)}
Mugwort (Artemisia vulgaris)
Mugwort
*(Artemisia vulgaris)*

**MANAGEMENT**

- **MECHANICAL** – Mowing will stunt, but not kill. Extensive rhizomes make pulling only effective for small, initial infestations. Repeated tilling is effective.

- **CHEMICAL** – Foliar spray of glyphosate during late season. Imazapyr or mixture of clopyralid/ triclopyr/glyphosate effective during rapid growth stage.

- **OTHER** – May be seed bank at some locations.
Mugwort Alternatives

Artemisia vulgaris

Solidago - Goldenrods

Apocynum cannabinum - Indian Hemp

Pycnanthemum muticum – Mountain Mint
Japanese Barberry (*Berberis thunbergii*)
Japanese Barberry (*Berberis thunbergii*)
Japanese Barberry  
(*Berberis thunbergii*)

**MANAGEMENT**

- **MECHANICAL 1** – Mowing followed by directed heating with propane torch effective for small clumps in forest.
- **MECHANICAL 2** – Pulling only reasonable for very small clumps.
- **OTHER** – Because few seeds successfully establish under forest shade, no need to remove cut stems.
Japanese Barberry
(*Berberis thunbergii*)

**MANAGEMENT**

- **CHEMICAL 1** – Foliar sprays of triclopyr, glyphosate, imazapyr and metsulfuron-methyl are effective.
- **CHEMICAL 2** – Cutting stems and painting cut stems effective, but labor intensive (use dye).
- **CHEMICAL 3** – Foliar treatments effective from month after leaf expansion until autumn when leaves turned ¼ yellow.
Japanese Barberry
*Berberis thunbergii*

- Hedge, Barrier
- Mass planting
- Colored foliage
- Adaptability and durability
- Fall color
Japanese Barberry Alternatives

*Physocarpus opulifolius* cvs. Ninebark

*Cotinus coggygria* cvs. Common Smokebush
Oriental Bittersweet (*Celastrus orbiculatus*)
Oriental Bittersweet (*Celastrus orbiculatus*)
Oriental Bittersweet
(*Celastrus orbiculatus*)

**MANAGEMENT**

- **MECHANICAL** – Cutting stems in trees will not control, but will reduce seed production.
- **CHEMICAL** – Paint cut stems or foliar spray in late summer glyphosate*, triclopyr. Basal bark herbicide application (BEE) mixed in vegetable oil.
- **OTHER** – Deep root system makes pulling or torch impractical except for small stems.

*Dreyer (1998) found glyphosate not effective.*
Oriental Bittersweet
*Celastrus orbiculatus*

- Vine
- Autumn fruit
- Durability
Oriental Bittersweet Alternatives

*Celastrus scandens*

American Bittersweet
Black Swallow-wort (Cynanchum louiseae)
Black Swallow-wort
*(Cynanchum louiseae)*

Pale Swallow-wort
*(Cynanchum rossicum)*
Swallow-worts
(*Cynanchum* spp.)

MANAGEMENT

- **MECHANICAL** – Cutting repeatedly will prevent production and dispersal of seeds, but regrowth from root crowns will occur.

- **CHEMICAL** – Foliar sprays w/ surfactant: Triclopyr most effective in late spring to early summer; glyphosate most effective in mid to late summer (before pods mature).

- **CHEMICAL** – Cut-stem treatments: In summer to early fall, apply glyphosate directly to freshly cut stems.
Swallow-worts Alternatives

Asclepias syriaca – Common Milkweed

Smilax herbacea – Carrion Flower

Apocynum cannabinum – Indian Hemp
Autumn Olive (*Elaeagnus umbellata*)
Autumn Olive
(*Elaeagnus umbellata*)
Autumn Olive
(*Elaeagnus umbellata*)

**MANAGEMENT**

- **MECHANICAL** – Pull small stems. Propane torch in August may be effective.
- **CHEMICAL** – Foliar sprays with surfactant: Imazapyr, triclopyr or glyphosate … Imazapyr tends to be the most effective, especially early in growing season.
- **CHEMICAL** – Cut-stump treatments: Apply glyphosate or imazapyr directly to freshly cut stumps (late spring into fall).
Autumn Olive
*Elaeagnus umbellata*

- Hedges, massing
- Barriers
- Silver-green leaves
- Durability
- Autumn fruit
Autumn Olive Alternatives

*Ilex verticillata*
Winterberry Holly

*Aronia arbutifolia*
Red Chokeberry
Japanese Knotweed
(Fallopia japonica; Polygonum cuspidatum)
Japanese knotweed
(*Polygonum cuspidatum*)
Japanese Knotweed
(*Polygonum cuspidatum*)

MANAGEMENT

- **MECHANICAL** – Repeated mowing will reduce, but not eliminate.
- **CHEMICAL** – Foliar sprays of glyphosate or imazapyr effective in August or Sept. (before first frost). Stem injections of glyphosate suitable for small infestations.
- **OTHER** – May require multiple years to eliminate sprouting from all rhizomes.
Japanese Knotweed
Alternatives

Fallopia japonica

Clethra alnifolia - Summersweet

Cornus amomum
Silky Dogwood

Cornus racemosa – Gray Dogwood
Morrow’s Honeysuckle (*Lonicera morrowii*)
Tartarian Honeysuckle (*Lonicera tartarica*)
Shrub Honeysuckles  
(*Lonicera* spp.)

**MANAGEMENT**

- **MECHANICAL** – Repeated cutting prior to fruit development to prevent seeds.
- **CHEMICAL** – Foliar sprays of triclopyr in late spring to mid summer, or glyphosate in mid to late summer. Cut-stump treatments: Glyphosate somewhat more effective than triclopyr.
- **OTHER** – Full leaf expansion is necessary for foliar applications or resprouting will occur.
Shrub Honeysuckles
(*Lonicera* spp.)

**MANAGEMENT**

- **MECHANICAL** – Pulling only reasonable for very small clumps
- **CHEMICAL 1** – Foliar sprays of glyphosate, triclopyr (BEE) and imazapyr are effective. Addition of imazapyr or metsulfuron-methyl to glyphosate improves results.
- **CHEMICAL 2** – Basal bark application of triclopyr (BEE) mixed in vegetable oil.
Shrub Honeysuckles
*Lonicera tatarica* and others

- Hedges, massing
- Durability
- Spring flowers
- Late summer fruit
Shrub Honeysuckle Alternatives

*Cephalanthus occidentalis*  *Diervilla sessilifolia*

**Buttonbush**  **Southern Bush Honeysuckle**
Japanese Stiltgrass (*Microstegium vimineum*)
Japanese Stiltgrass
(*Microstegium vimineum*)

Not Stiltgrass!
Japanese Stiltgrass
(*Microstegium vimineum*)

**MANAGEMENT**

- **MECHANICAL 1** – Pull plants between flowering and seed maturation; will require return visit to get missed plants.
- **MECHANICAL 2** – Mow plants in late August when dry. Need to cut close to ground and will require return visit.
- **MECHANICAL 3** – If wet, propane torches can be used for return visit treatment to kill missed plants.
Japanese Stiltgrass
(*Microstegium vimineum*)

**MANAGEMENT**

- **CHEMICAL (EFFECTIVE)** – Foliar spray with imazapic, fenoxaprop-p-ethyl, glyphosate, pelargonic acid plus pendimethalin, and glufosinate.

- **CHEMICAL (NOT EFFECTIVE)** – Foliar spray with pelargonic acid or vinegar.

- **CHEMICAL (EXTRA)** – Foliar spray at one-quarter labelled rate was effective.

- **OTHER** – Extensive seedbank will require several years of control.
Japanese Stiltgrass Alternatives

Microstegium vimineum

Dennstaedtia punctilobula
Hay scented Fern

Carex pensylvanica
Pennsylvania Sedge

Brachyelytrum erectum
Southern Long-awned Wood Grass
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