Techniques and Cost to Manage Perennial Knotweeds in Wisconsin

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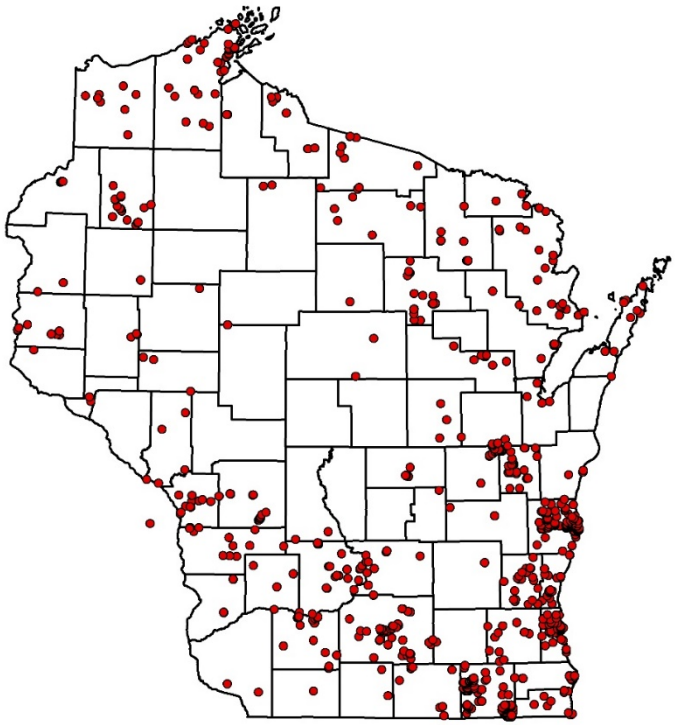
Several perennial knotweeds are regulated plants in Wisconsin

- Giant knotweed
  - *Fallopia sachalinensis*
  - **Prohibited**
- Japanese knotweed
  - *Fallopia japonica*
  - Restricted
- Bohemian knotweed
  - *Fallopia x bohemica*
  - **Prohibited**

986 known infestations (2017)



Effective management methods

- Excavation
- Smothering
- Herbicides

Excavation/Removal

JAPANESE KNOTWEED SOLUTIONS

https://www.jksl.com/japanese-knotweed-eradication-disposal/

Smothering

NEW HAMPSHIRE Dept. of Agriculture

1. Cut knotweed stems in summer and remove
2. Apply mulch over cut stems

Smothering

NEW HAMPSHIRE Dept. of Agriculture

3. Cover area with heavy plastic, extend material at least 5 feet beyond edge of infestation.
4. Make sure it isn't disturbed or light can't get to soil surface for **5 years…..**

Herbicides

- Usually the most cost efficient method
- Several herbicides can give 90+% control for > 1 year

- Applications can be
  - **Broadcasted**
  - **Treated to individual plants**
  - Injected into stems

MANAGEMENT OF

INVASIVE PLANTS IN WISCONSIN

A3924-11

Brendon Panke and Mark Renz

Japanese knotweed

(Polygonum cuspidatum)

Invasive plants can thrive and aggressively spread beyond their natural range, disrupting ecosystems. The *Management of Invasive Plants in Wisconsin* series explains how to identify invasive plants and provides common management options. Management methods recommend specific timings for treatment, as well as expected effectiveness. For more

Japanese knotweed is an herbaceous perennial, growing up to 10′ tall. Hollow, reddish, arching, bamboo-like stems are smooth and stout, and they can persist after plant dies back each year. The base of the stem above each joint is swollen and surrounded by a membranous sheath (ocrea).

Legal classification in Wisconsin: Restricted

Leaves: Alternate, egg-shaped to almost triangular, 4–6″ long, 3–4″ wide. Dark green on upper surface and pale green on lower surface.

Flowers: Blooms in late summer. Flowers are numerous, highly branched, tiny, creamy white or greenish, and found where the leaf attaches to the stem (axils), near the tips of stems.

Fruits and seeds: Small, winged, triangular fruits carry very small, shiny seeds.

Roots: Plants arising from seed have a taproot up to 6′ deep. Stout rhizomes can reach 65′ or more from parent plants and give rise to new stalks. Plants arising from seed and rhizome also have

Similar species: Giant knotweed (*P. sachalinense*) is also invasive, but grows up to 13′ tall with larger leaves. The two species are known to hybridize.

Ecological threat:

- Invades upland and lowland sites that are disturbed and undisturbed.
- Poses a significant threat to riparian areas, where it can rapidly spread.
- It tolerates shade, high temperatures, high salinity, and drought.
- It can be transported to new sites as a contaminant in fill dirt or on equipment. During floods, it spreads downstream by shoot fragments, rhizomes, or occasionally by seeds. Escapees from neglected gardens and discarded cuttings are common routes of dispersal from urban areas.
- Although reported to not produce viable seed, several studies have shown that populations of knotweed in the United States can produce viable seed that readily germinate and survive in field conditions.

Herbicides Evaluated

Herbicide	Active Ingredient	Selectivity	Residual
Arsenal (Habitat)	Imazapyr	Not selective	YES
Capstone	Triclopyr + aminopyralid	Safe to established grasses	YES
Perspective	Aminocyclopyrachlor + chlorsulfuron	Safe to established grasses	YES
Milestone	Aminopyralid	Safe to established grasses	YES
Rodeo	Glyphosate	Not selective	NO
Crossbow	2,4-D + triclopyr	Safe to established grasses	Limited

Before you select any herbicide determine the following:

1. What products are labeled for use at this location?
   - Homeowner (urban), Roadside (noncrop), Streambank(aquatic)
2. What desirable plants are present or will be seeded?
   - Herbicide selectivity/residual activity
3. What is the size of the infestation?
   - Individual plant treatment vs largescale

Effectiveness 1 year after fall treatment

Summary of herbicide options

- Arsenal/Habitat
  - Effective in summer or fall
  - get bareground residual may prevent revegetation
- Milestone
  - Best results in fall at spot trt rate (14 fl oz/A)
  - Safe to established grasses
- Roundup/glyphosate
  - Effective, but need REALLY HIGH RATE (9% Rodeo)
  - Only effective homeowner option

Details related to herbicide applications

- Applications in the **fall prior to a frost** (flowering) gave best results
- **Don’t need to mow** to obtain high levels of control
  - Mowing can make applications easier
- Higher application volume **doesn’t improve control**

Can we eradicate knotweed on WI roads and what does it cost?

- Evaluated effectiveness and cost
  - 8 location in SE Wisconsin
  - 2014 mowed in July then applied herbicide to resprouting tissues in September
    - 14 fl oz/A milestone used
  - Estimated cost of each method EACH YEAR
    - Herbicide
    - Time for staff to mow/treatment

Initial Year (2014)

- cover 80-99%
- treated all sites (8)
- COST $19/1000 ft^2

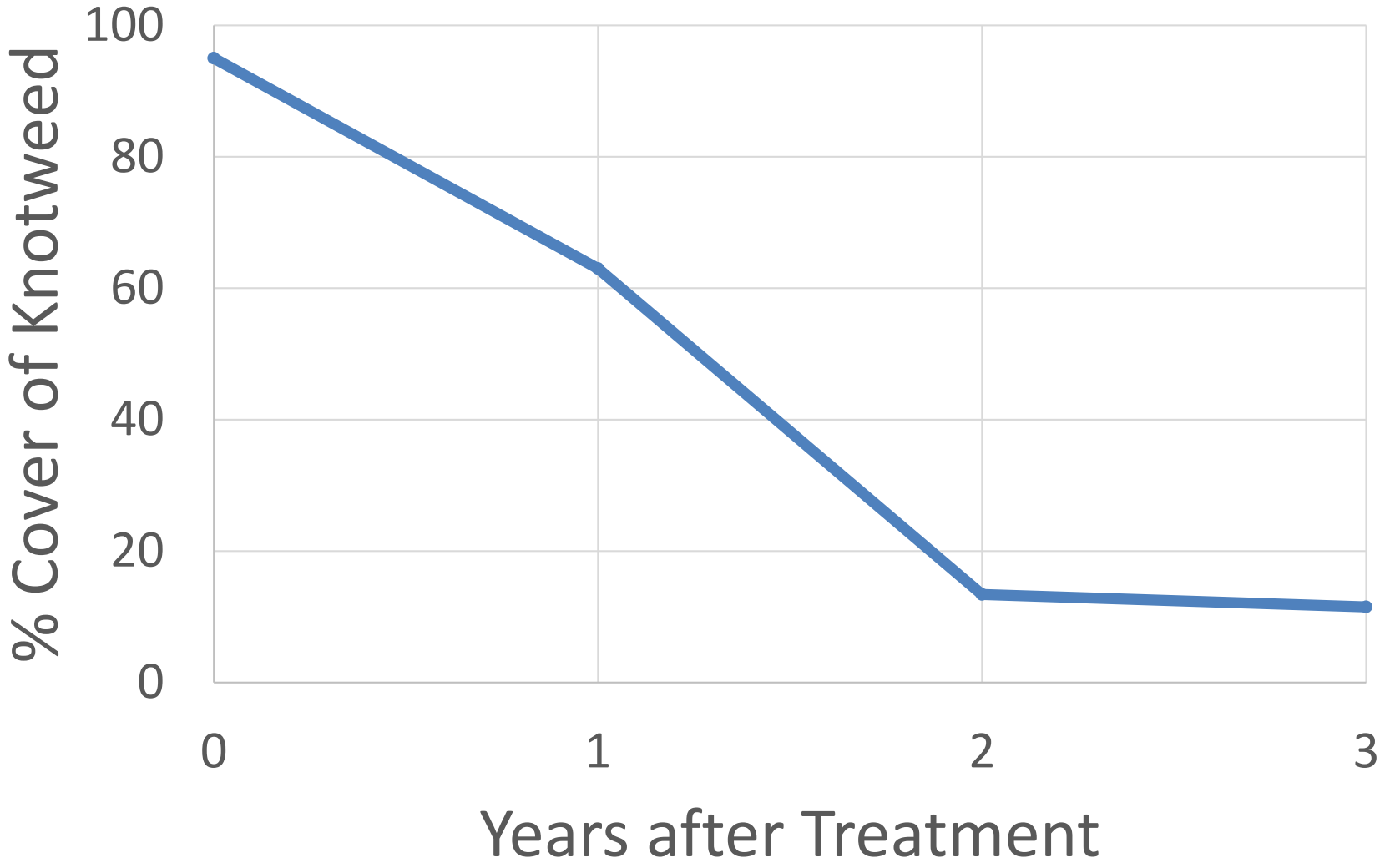
Second Year (2015)

- 37% control
  - Ranged from 10 – 80%
- retreated 7 of 8 sites
- COST $4/1000 ft^2

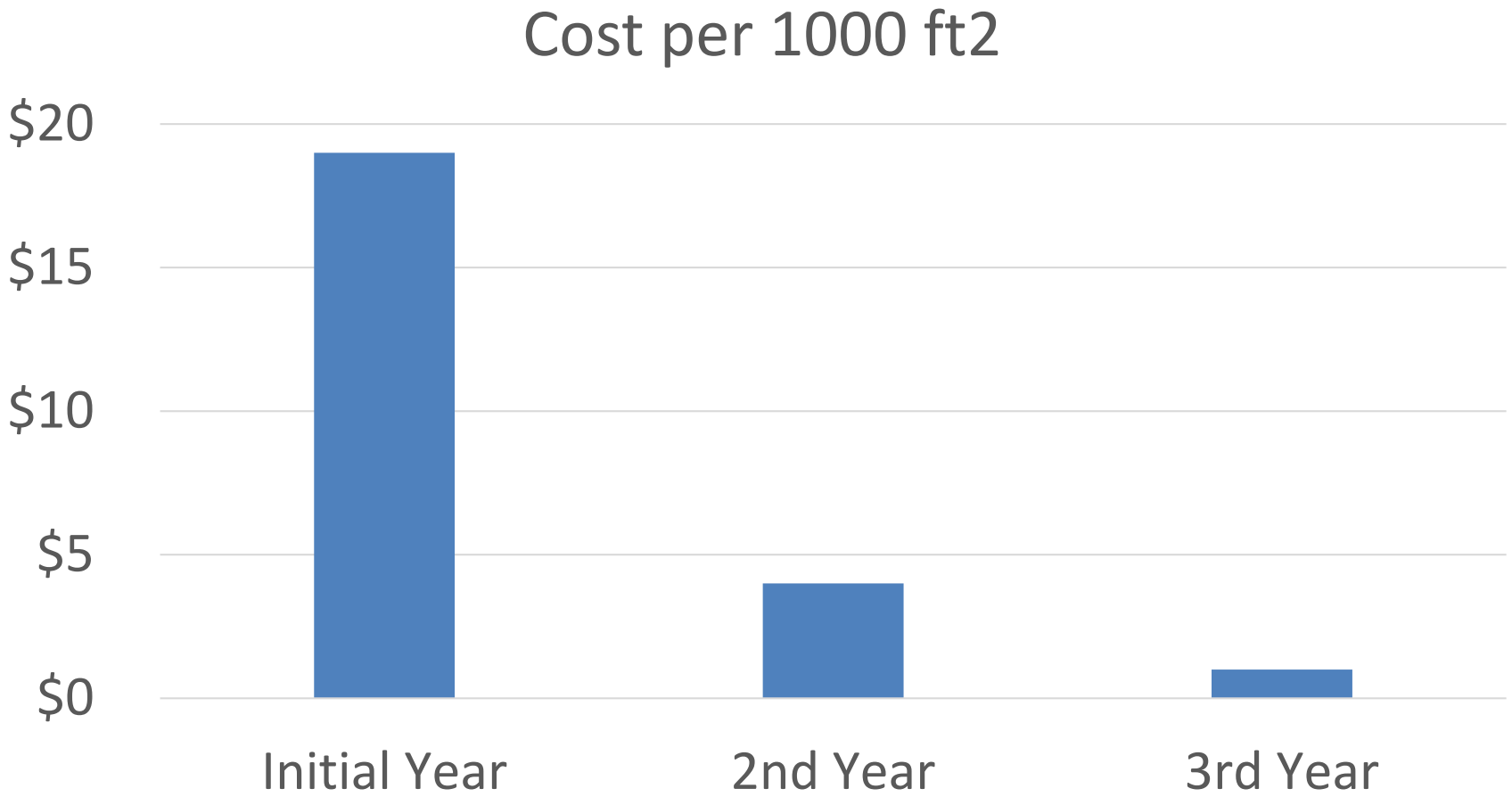
Third year (2016)

- 87% control
  - Ranged from 75- 98 %
- retreated 2 of 7 sites
- COST: $1/1000 ft^2

Repeated control over three years can reduce cover but not eradicate populations



Initial costs are high, but manageable after the first year!



What about restoration?

Conclusions

- Knotweed can be suppressed, but need to follow-up for **3+** years
  - Range of herbicides that are effective
  - Select herbicides carefully
- Future research is needed on how to revegetate sites after control

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QUESTIONS