

# Knotweed

SPECIES: Japanese, Giant, Bohemian, and Himalayan  
(*Polygonum cuspidatum*, *sachalinense*, *bohemicum* and *polystachyum*)

## Description:

Four species of knotweed are expanding exponentially in the Pacific Northwest (Japanese, Giant, Bohemian, and Himalayan). While growth habit is similar, there are some notable differences in appearance. Giant knotweed can reach up to 15 feet in height, while the others reach "only" 6 to 10 feet. Giant knotweed leaves have a distinctive heart shape and can be up to a foot across while other species have smaller leaves with either a blunt leaf base (Japanese or Bohemian) or a more linear overall shape (Himalayan). Stems of knotweed are smooth (bamboo-like), stout, and swollen at the joints where the leaf joins the stem. The stems are hollow, but may be water-filled.



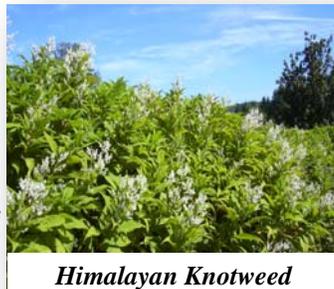
Knotweed spread is mainly by rhizomes and stem fragments; however seed spread is also a concern. The roots and rhizomes may extend 30 feet in any direction from the parent plant and can grow to 7 feet deep.

## Impacts:

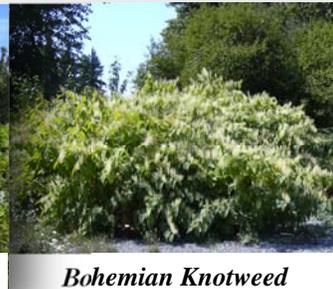
Knotweed severely degrades native plant and wildlife habitat. It spreads quickly to form dense thickets that exclude native vegetation and greatly alter natural ecosystems. Root fragments as small as ½" can form new plants that grow into colonies. Rainwater sweeps plant fragments into ditches, rivers and creeks, which disperses the plants throughout the community. The fast growing knotweed then takes advantage of the fresh disturbance to compete with native species and quickly shades them out.

## Control Options:

Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The strategy of Thurston County's IPM policy is to minimize the use of pesticides.



*Himalayan Knotweed*



*Bohemian Knotweed*



*Giant Knotweed*

### ► Manual Techniques

According to the Washington State Department of Agriculture Terrestrial Noxious Weed Seed and Plant Quarantine WAC 16-752-610 it is **prohibited to transport, buy, sell or offer for sale, or distribute all plants or plant parts on the quarantine list, which includes Japanese, Giant, Bohemian, and Himalayan knotweeds.**

*"There have been no field trials that reported adequate control though repeated cutting. One research paper cites that cutting knotweed tops can reduce root biomass, but these roots were in small pots in a greenhouse, and may not be applicable to a field population where root expansion is not limited."* Tim Miller, Ph.D., Associate Professor of Weed Science at Washington State University.

Because woody knotweeds reproduce readily from very small pieces of roots and stems, mechanical control is ineffective. **We do not recommend cutting, pulling, or mowing because these practices only encourage denser new growth and can increase the threat of spread from original infestation sites.** These are some common best management practices for dealing with green material from knotweed:

- Do not allow cut canes, or any part of a cut cane, to come into contact with water or soil.
- If you cut canes, allow them to air dry completely before disposing of them in the garbage. Dry canes on a surface where they will not come into contact with soil or water, such as on concrete or a tarp.
- Do not compost knotweed plant material or dispose of it in a brush pile or with your yard waste.
- Do not mow or weed-trim knotweed; this encourages stem growth and spreads plant pieces to new areas.
- Do not dig or pull roots; this encourages knotweed to spread and increases the size of infestations.
- Do not disturb any soil where knotweed has been actively growing (even if treated with herbicides), and monitor for regrowth for at least two seasons. If regrowth occurs, re-treatment will be necessary.
- Because roots of large infestations may be connected, cooperate with neighboring property owners to control large infestations that cross property lines.

### ► Biological Techniques

Research has just begun in Japan to locate natural enemies of Japanese, Giant, and Bohemian knotweed. Several biological options were found, but testing on plant species closely related to knotweed will be necessary prior to any possible introduction to North America.



► **Chemical Techniques**

**Aquatic / Riparian Applications:** Knotweed often grows in wet areas along streams and ditches. If there is a chance for your herbicide to get into a water body, the use of an herbicide formulated for aquatic settings is required. **Aquatic herbicides are restricted for use in Washington State to licensed applicators only.** Because of this, you may wish to contact a licensed applicator to develop a control plan.

**Terrestrial (Dry Land) Applications:** Spot spraying with an herbicide containing the active ingredient **glyphosate** (example: Roundup Pro®, Eliminator Weed and Grass Killer®, etc.) can be used to treat knotweed effectively. Glyphosate is non-selective, and will injure any plants that it comes in contact with, including grass. Some glyphosate products have a supplemental label for treating knotweed by an alternate method known as “stem injection”. This method is especially useful where there are sensitive plants nearby. One product known to have this supplemental labeling is Roundup Pro®. Due to recent health reviews, Thurston County recognized some scientific studies have concluded the use of glyphosate products have carcinogenic potential. The risk of spot spraying with these products is considered to be low provided the applicator uses personal protection equipment which includes chemically resistant gloves in addition to long sleeve shirt, long pants, socks and shoes and all other label precautions are followed.

**Imazapyr** (example: Polaris® or Alligare™ Imazapyr 2SL) is also effective in controlling knotweed. Imazapyr is also non-selective and may damage or kill any other plants that it contacts. Do not use on lawns, walks, driveways or similar areas where roots of desirable vegetation may extend and be exposed to potential injury. It may also leave persistent bare ground in the treatment area. This can be minimized by using only as directed, spraying at the recommended strength and no more than necessary to wet the surface of the leaves and stems. Products containing the active ingredient imazapyr are considered “moderate in hazard” by Thurston County’s pesticide review process for the potential for chemical mobility and persistence.

**Foliar applications:**

- For spot applications of either glyphosate or imazapyr, prepare herbicide by following label instructions at rates listed below. Spray each plant thoroughly on the stems and leaves, enough to be wet but not dripping. Spot application means the herbicide is applied only to the knotweed plants, and not on the surrounding plants or soil.
- Keep people and pets off treated areas until spray solution has dried.

**Hollow stem injection using glyphosate:**

- Using Roundup Pro®, follow supplemental label instructions for knotweed hollow stem injection. A hole suitable for injecting the herbicide should be made through both sides of the stem (to allow water and pressure to vent and prevent blow-back) using an awl or other convenient pointed tool about 6 inches above the ground, just below a node. (Nodes are circular thickenings or scars surrounding the stem where leaves are or were previously attached.) The herbicide is then injected into this hole. Each stem of the knotweed plant must be treated. Mark each one when injecting it, to avoid retreating the same stem.

**Timing:** The best time to treat knotweed with glyphosate is in July or August, when the plant is in the flower bud to blooming stage. However, for foliar treatment, the plants may be over 10 feet tall by then and hard to spray without significant chemical drift. Bending stalks over prior to treatment can allow more thorough and effective treatment with less off target damage. Imazapyr products can be applied from late spring until fall, anytime there is sufficient leaf surface.

**Pollinator Protection:** To minimize negative impacts to bees and other pollinators, treatment prior to blooming is recommended. Removal of flowers before treating can be an option in some circumstances. Use of the injection method would also have minimal effect on pollinators. If treatment must occur during the blooming period, try to spray early or late in the day or on cloudy, cool days when pollinators are least active.

Product/Method	Rates	Mix
Similar products may be significantly different in strength. Read your label carefully, and make adjustments to rates accordingly.		
<b>Glyphosate / Spot Foliar</b> Roundup Pro® Eliminator Weed & Grass Killer®	2%	Add 2.6 oz (5.2 Tablespoons) concentrated product per gallon of water.
<b>Glyphosate / Injection</b> Roundup Pro®	100%	Using a hand-held injection device, inject 6 mL per stem of this product full strength into each cane in between the second and third internodes.
<b>Imazapyr / Spot Foliar</b> Polaris® Alligare™ Imazapyr 2SL	2%	Add 2.6 oz (5.2 Tablespoons) concentrated product per gallon of water.

**READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS.** Obey all label precautions including site specific and safety measures. Always use personal protective equipment that includes coveralls, chemical resistant gloves, shoes plus socks, and protective eyewear. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names. Information provided is current as of the date of the fact sheet. Pesticide product registration is renewed annually. Product names and formulations may vary from year to year.

**REFERENCES:**

“Controlling Knotweed in the Pacific Northwest”, Jonathan Soll, The Nature Conservancy, January 16, 2004  
*Knotweed Control on the Skagit River, 2002 Results and Recommendations*, Lindsey Brandt, TNC of Washington  
*Integrated Pest Management Plan for Freshwater Emergent Noxious and Quarantine Listed Weeds*, WA State Departments of Agriculture and Ecology, Revised July 2004 (Pages A-15 through A-35)  
*Biology and Management of Knotweeds in Oregon: A Guide for Gardeners and Small-Acreage Landowners*. OSU EM 9031 June, 2011



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