

Knotweed

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

Description:

Four species of knotweed are expanding exponentially in the Pacific Northwest (Japanese, Giant, Bohemian, and Himalayan). The major differences in the species are: Giant can reach up to 15 feet in height, while the others reach “only” 6 to 10 feet. Giant leaves have a distinctive heart shape and can be nearly a foot across while other species have smaller, linear leaves without a heart shape. Stems of knotweed are smooth (bamboo-like), stout, and swollen at the joints where the leaf meets 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 are rhizomes that may extend 30 feet from the parent plant and can grow as deep as 7 feet.



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:

► Manual Techniques

Removing knotweed from the soil is nearly impossible due to the extensive root system. Covering plants with tarps and plastic sheets has been shown to be marginally effective. Cutting the stems once will result in new shoot emergence. However, repeated cutting may eventually tax the plant of its resources. Cut each time the plant reaches six inches tall. At a minimum cut at least 10 times per season (twice a month April through August) and monthly cuttings afterwards, for 2-3 years is necessary. **Research has shown that cutting once per month from April to October resulted in an increase in stems after 3 years.**

All cut knotweed stems need to be disposed of in sturdy plastic bags to ensure that plant fragments get buried and cannot grow.

► 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 grows in wet areas that threaten areas along rivers, streams, ditches and other riparian settings. Because of the difficulty in controlling these sites, contact a licensed applicator to develop a control plan. Herbicide spraying within 50 feet of a water body requires the use of an herbicide formulated for aquatic settings. **Aquatic herbicides are restricted for use in Washington State to licensed applicators only.** Currently, Aquamaster™ (active ingredient is glyphosate) is the only aquatic herbicide for the control of knotweed that is considered “low in hazard” by Thurston County’s pesticide review process. Only spot applications are recommended.

There are other herbicides (Habitat and Polaris AQ) that are more



effective at controlling knotweed although the active ingredient, imazapyr, is considered high in hazard for persistence and potential for movement off the application site. However, imazapyr is considered low in hazard for toxicity to mammals and other non-target organisms. Like Aquamaster, containing glyphosate, Habitat and Polaris AQ are aquatic herbicides intended for use within 50 feet of a water body. **Aquamaster and Habitat are aquatic herbicides restricted for use in Washington State to licensed applicators only.**

FOLIAR applications of imazapyr:

Arsenal™, Habitat™ may not be available to homeowners in stores and may require a licensed applicator to obtain and apply it, be aware that this chemical is considered to be mobile and persistent in both terrestrial and aquatic environments. Sunlight can play an important role in degrading this product so use this product on sunny days with no expected rainfall for at least a couple days following application. Maintain maps of where this herbicide is used so as not to reapply to the same area more than once a year resulting in an increased concentration in a small area. This chemical is considered very low in toxicity to mammals and all other species tested although it can cause injury to many non-target plant species if it migrates off the site of application. If any aquatic herbicide gets into the water a permit is required called the National pollutant discharge elimination system (NPDES). In Washington state the permit is administered by Washington Department of Agriculture, or the Washington Department of Ecology, dependent upon the target weed and the type of body of water where application is occurring.

TERRESTRIAL APPLICATIONS:

Terrestrial herbicides are for use on plants at least 50 feet away from a water body. Like aquatic knotweed control, products containing the active ingredients glyphosate are considered effective for controlling knotweed in terrestrial (dry) environments. Several terrestrial herbicides containing glyphosate as the active ingredient have been reviewed and are considered "low in hazard" by Thurston County's pesticide review process (

The following techniques have shown 68-94% effective control of knotweed.

Foliar applications of glyphosate:

- Spot applications with glyphosate products are effective. Spot application means the herbicide is applied only to the knotweed plants and not on the surrounding plants or soil. Spray each plant thoroughly on the stems and leaves enough to be wet but not dripping.
- Only products with concentrated formulations with at least 40% glyphosate will be effective, pre-mixed products do not contain enough glyphosate to be effective.
- There is a general consensus in the Pacific Northwest that a minimum of 3% glyphosate product (after mixing for use) is necessary to adequately control knotweed and that, at that rate, repeat applications to re-growth will be necessary over the subsequent growing seasons. Follow label directions for mixing product to application strength.

Stem injection/cut stem treatment of glyphosate:

- Aquamaster™ has recently been issued a supplemental label approved for knotweed control on aquatic sites using a stem injection or cut stem treatment. The label for Aquamaster, limits the number of stems to be treated per acre at 1,514 (assuming the injection of 5 milliliters of herbicide per stem).
- Roundup Pro Concentrate™ has recently been issued a supplemental label for knotweed control using a stem injection treatment on terrestrial sites. The supplemental label, limits the number of stems to be treated per acre to 1,600 (assuming the injection of 5 milliliters of herbicide per stem).

Timing

The best time to chemically control knotweed in Washington State is in July or August (when the plant is in the flower bud stage). However, for foliar treatment, the plants may be over 10 feet tall by then and hard to spray without significant chemical drift. So, chemical control when the plants are still below 6 feet tall (June or July) will allow plant leaves to be thoroughly sprayed which will increase effectiveness. Patches with hundreds of stems will probably require treatment for two or more years.

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. 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 and product names and formulations may vary



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