

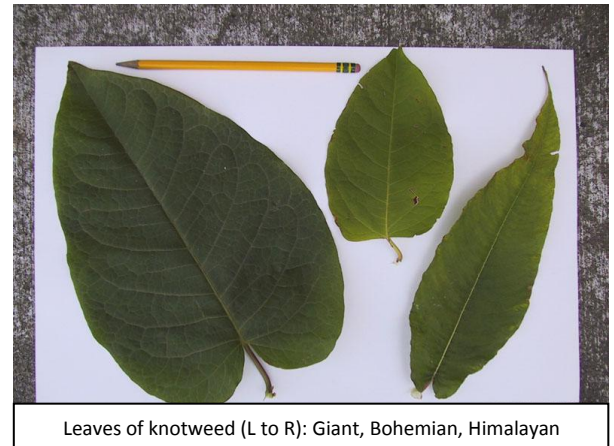


Control Options for Knotweeds

General information

The knotweeds, introduced from Asia as garden ornamentals, are perennials that grow up to 8-12 feet tall. The leaves are between 4 and 6 inches long. In late summer, the white flowers grow in branched sprays and attract many bees. The plant dies back in the winter and the tall brown stems remain standing. Knotweed tolerates a wide variety of conditions but will grow well in moist soil or river cobble, in full or partial sunlight. While it is most common in the flood zones along rivers and creeks, it also grows in roadside ditches, pastures, vacant lots, beaches, gardens, and even through cracks in paved areas.

There are four species of knotweed in the Pacific Northwest (Japanese, Giant, Bohemian, and Himalayan). Most plants observed here are likely to be Bohemian, a hybrid. One difference in the species can be seen in size and shape of leaves (see photo right). The stems are hollow, smooth and jointed, similar to bamboo stems, with which it is sometimes confused. Knotweed develops a deep, matted root system, with rhizomes that can grow to 30 feet or more in length, with a depth of up to 7 feet. Knotweed spread is mainly by rhizomes and stem fragments; however seed spread is also a concern. Knotweed usually spreads when roots are moved by floods or in soil contaminated with root fragments. Root fragments as small as ½" can form new plants that grow into colonies.



Leaves of knotweed (L to R): Giant, Bohemian, Himalayan

Manual/Mechanical Technique

Removing knotweed from the soil is nearly impossible due to the extensive root system. Digging of knotweed roots in areas larger than a square meter or two should be avoided as this can exacerbate the spread of knotweed with root fragmentation and soil disturbance. Proper disposal of roots is another concern. **Never put knotweed stems or roots in a home composting system.** Covering plants with tarps and plastic sheets has been shown to be marginally effective. Cutting the stems will result in new shoot emergence, but repeated cutting may eventually tax the plant of its resources and decrease the number of stems. At a minimum, cut at least 10 times per season (twice a month April through August). Regular cuttings for many years are necessary. **All cut knotweed stems and rhizomes need to be disposed of and sealed in sturdy plastic bags to ensure that plant fragments do not resprout.**

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 Recommendations

Important – Timing is Everything

The best time to chemically control knotweed in Washington State is August through early October (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. If this is a concern, plants can be bent or cut in June or July and will regrow to approximately 4 feet in about 6-8 weeks. Patches with hundreds of stems will probably require treatment for at least three years.

DRY GROUND APPLICATIONS

Terrestrial herbicides are for use on plants at least 50 feet away from a water body. Products containing the active ingredient glyphosate are considered effective for controlling knotweed in terrestrial (dry) environments. Glyphosate goes by many brand names. The following techniques have shown up to 94% effective control of knotweed.



Foliar applications of glyphosate:

Spray each plant thoroughly on leaves enough to be wet but not dripping. Apply to the knotweed plants and not on the surrounding plants or soil. **Use this method for late summer and fall applications – spring applications are not effective.** Only products with concentrated formulations with at least 40% glyphosate will be effective (see “active ingredient” on herbicide label). Pre-mixed products do not contain enough glyphosate for this treatment. Mixing the solution to 5-8% rate is necessary to adequately control knotweed. Repeat spot applications to re-growth will be necessary in subsequent seasons but to increasingly fewer plants. Follow label directions for mixing product to application strength.

Stem injection/cut stem treatment of glyphosate:

Roundup Pro Concentrate™ has 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 1,500 (assuming the injection of 5 milliliters of undiluted herbicide per stem). Every stem must be injected for this treatment to be effective.

AQUATIC/STREAMSIDE APPLICATIONS

Knotweed often grows in areas along rivers, streams, ditches and other riparian settings. Because of the difficulty in controlling these sites, please contact a licensed applicator to develop a control plan. **Herbicide spraying within 60 feet of a water body requires the use of an herbicide formulated for aquatic settings.** These aquatic herbicides are restricted for use in Washington State to licensed applicators only. Herbicides used in an aquatic setting and *not* formulated or labeled for use there (like RoundUp™) are likely toxic to fish and other non-target species and is considered an illegal application.

Your licensed applicator may also need to obtain a permit 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. More information on permits can be found online at:

<http://www.ecy.wa.gov/programs/wq/pesticides/index.html>

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. Use of brand names does not imply endorsement and is for reference only; other formulations of the same herbicides may be available under other names.

- **Always read and understand the label of the herbicides you choose to use.**
- **More is NOT better when using herbicides, and may actually hinder the ability of the herbicide to injure the entire target plant, including the roots, if the solution is too strong. This wastes money and effort and puts more product into the environment than is necessary. ALWAYS follow the recommended rates on the label.**
- **With all herbicides, when you apply them is as important as how you apply them.**