

# Japanese Knotweed (*Polygonum cuspidatum*) Control Fact Sheet

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## About *Polygonum cuspidatum*

### Characteristics

Japanese knotweed (also known as Japanese bamboo or Mexican bamboo) is an upright, shrub-like herbaceous perennial that can grow up to 10 ft. tall. Its stems are hollow, smooth, stout and swollen at the joints. It has alternate leaves that are up to 6 inches long and 3 to 4 inches wide, broadly oval, triangular or heart-shaped, and pointed at the tip. A member of the buckwheat family (Polygonaceae), membranous sheaths surround the base of the stem above each joint. It has greenish-white flowers, and can spread by seed as well as vegetative parts (rhizomes, runners, roots and stems). Stem segments will regrow if they contain viable nodal buds. Once established, it spreads via large rhizomes, which can reach up to 30 feet in length.

### History and Habitat

Japanese knotweed is native to eastern Asia. It was introduced to the United Kingdom in 1825, and to North America later in the 19<sup>th</sup> century. It is widely distributed throughout much of the eastern United States. It grows in a variety of soil types (silt, loam, sand) at a pH range of 4.5 to 7.4. It grows primarily in moist, unshaded habitats, but is found at sites ranging from xeric to hydric. After emerging in early spring, it has been observed to grow up to 8 cm per day. In North America, flowering occurs in August and September, with seeds appearing two weeks after flowering. It requires high light environments and generally does not invade forest understory.

## Management

### Mechanical Methods

Digging and cutting are mechanical methods that are appropriate for controlling smaller stands of Japanese knotweed, or in environmentally sensitive areas where the use of herbicides is not advised. Digging to remove Japanese knotweed is considered labor intensive and largely ineffective at controlling growth of large stands, but may be effective for very small, young populations. The entire plant, including roots and runners must be removed with a digging tool. Juvenile plants may be pulled by hand. Cutting shoots as close to the ground as possible reduces the viability of Japanese knotweed rhizomes, and can be done any time during the growing season before

senescence. Cutting is most effective when done three or more times per growing season. Cut plant parts should be bagged and disposed of properly to prevent further spread.

Mechanical removal may not be the best method of control where certain site limitations exist, such as steep slopes.

### Chemical Methods

**IMPORTANT:** Read and follow all herbicide labels carefully before use. There are several methods of herbicide-based control that have proven to be effective alone or in combination with mechanical methods. Quickly establishing alternative native plant cover after treatment will help prevent Japanese knotweed from reestablishing. Foliar spraying is appropriate for large populations of knotweed.

A 2% solution of glyphosate or a 3-4% solution of triclopyr should be used to spray foliage until wet but not dripping. The solution should be made by mixing a concentrated formula of glyphosate (Rodeo™) containing about 40% active ingredients with water or mixing 1oz of triclopyr (Garlon 3A™) per gallon of water. Garlon 3A has specific restrictions regarding use in and around water. In The Nature Conservancy's trials, it took two years to eliminate knotweed when using Garlon™ and three years with Rodeo™. Round-up™, another herbicide with glyphosate as its active ingredient, has also been used to control this plant but is not recommended for use where surface water is present or in intertidal areas below the mean high water mark.

Heavily diluted, "ready to use" glyphosate products are not appropriate for use with this method. A 0.5% non-ionic surfactant is recommended to penetrate the leaf cuticle. Use a low pressure and coarse spray pattern, or deliver the solution using a "weed glove" to reduce injury to adjacent vegetation. Spraying should be done when shoots are still only 1-2 meters tall, making sure to cut taller plants down to about 1.5 meters before spraying.

The cut stem method should be used when Japanese knotweed is growing in close proximity to desirable plants, as it minimizes damage to adjacent vegetation. This method is effective even at low temperatures, if the ground is not yet frozen. Stems should be cut

about 2 in. above ground level, between the lowest nodes. Carefully pour 5 ml of undiluted herbicide in to the stem cavity. Please check the label to make sure your herbicide has been approved for use in this way. Subsequent foliar applications may be required for continued management.

Another successful, though labor intensive chemical control method involves injecting herbicide into the stem of the plant. Stem injection applications are made in the lower portion of the plant in the first few internodes above the ground level. For this method, an injector tool is needed that will deliver about 5mL of herbicide with each injection. The needle of the tool is inserted perpendicular to the stem, and midway between lower nodes. The applicator delivers the predetermined amount of herbicide into the stem cavity. The plant will normally take up the herbicide within 20 minutes of the injection.

This method causes minimal harm to adjacent vegetation and is less affected by weather conditions since the herbicide is contained within the plant. It also eliminates the need for cutting. It can be done

any time during the growing season, with early June being the best time. Symptoms of herbicide damage have been observed in non-target plants after treatment of Japanese knotweed by the stem injection method on sites where heavy rainfall occurred over an area with sandy soils. This method, however, often takes multiple seasons, which is difficult when the stems become too small to inject.

It should be noted that a stand may require three to five years of repeated chemical treatment before knotweed is effectively controlled.

*NOTE: Not all glyphosate formulations are labeled for use with the cut stem and stem injection control methods. Be sure to use an herbicide that is approved and legal to use for the control method that you choose (e.g. Rodeo™ and Garlon™ are approved and legal to use for these methods in RI). The label is the law. Be sure to secure the required permits from the appropriate regulatory agency before applying herbicides.*

*Mention of pesticide products in this document does not constitute endorsement of any material*

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