



## Japanese knotweed (*Polygonum cuspidatum*)

### Description

- Refer to the DCNR Invasive Exotic Plant Tutorial knotweed page ([http://www.dcnr.state.pa.us/forestry/invasivetutorial/japanese\\_knotweed.htm](http://www.dcnr.state.pa.us/forestry/invasivetutorial/japanese_knotweed.htm)), which describes Japanese knotweed and giant knotweed (*Polygonum sachalinense*).
- Herbaceous, rhizomatous, perennial dicot.
- Dioecious – male and female flowers on separate plants.
- Grows in tall (6 to 10-plus feet), dense stands that exclude almost all other vegetation.
- Native to East Asia, imported as an ornamental in the late-1800's.
- Grows almost anywhere, from acidic spoil in full sun to fertile, shaded alluvial soils along rivers and streams.

### Management Keys

Japanese knotweed is difficult to control, but as long as you are willing to invest the effort and follow a few key guidelines, it can be successfully suppressed.

#### Target the Rhizomes

To eliminate knotweed, you have to injure the rhizomes. This is most effectively done with systemic herbicides, when the plant canopy is exporting sugars to the rhizomes for growth and storage.

#### Timing is Key

Systemic herbicides are most effective when applied later in the growing season (Figure 1). This is when the foliage is sending sugars produced through photosynthesis to the roots and rhizomes. Systemic herbicides are moved in the same direction through the plant as the sugars.

Applications made too early in the season or too soon after cutting do not translocate to the rhizomes, and only injure the shoots.

#### Cutting Helps

Cutting alone is not an effective suppression approach. However, cutting prior to an herbicide application can be very helpful. If you wait until about June 1 to cut, and wait 8 weeks to treat, you will find that the knotweed regrowth is much shorter than when

it was cut. Typically, knotweed regrows 2 to 4 feet tall.

When knotweed is growing near water, cutting is useful because it is easier to treat the shorter regrowth without getting spray solution into the water.

If the knotweed is not near water, you have to decide if cutting the knotweed is a good use of your finite time and effort. Treating intact knotweed towering over your head is a lot like work, but cutting may be even more work.

#### Be Patient

Wait 8 weeks after cutting before applying herbicide. If you apply too soon after cutting, the herbicide will not be translocated to the rhizomes.

#### Recommended Herbicides

We recommend the herbicide *glyphosate*. *Glyphosate* is the active ingredient in the many 'Roundup' products that are available for agricultural, professional, and homeowner use. As of this writing, the *glyphosate* products available on the PA statewide herbicide contract are 'Aquaneat' and 'Glyphomate 41'.

*Glyphosate* has several advantages:

- it's effective
- it has low toxicity to non-target organisms
- it is available in aquatic-labeled formulations
- it has no soil activity
- it's relatively inexpensive

The herbicide *imazapyr* ('Arsenal Powerline', 'Habitat') is effective against knotweed, but has considerable soil activity and can injure nearby trees through root absorption.

The herbicide *triclopyr* ('Garlon 3A') is recommended in some accounts, but our research has shown that rates up to 4 quarts/acre had no visible effect on the following year's growth.

#### Be Persistent

There are two phases of knotweed management – control and maintenance. The control phase takes two seasons, and includes at least two operations in year-one (e.g. cut and treat, or treat twice) and at least one application in year-two.

After your control efforts have nearly eliminated the knotweed, you need to periodically monitor the sites



and treat any signs of new growth to prevent re-infestation.

### After the Knotweed

If you remove the knotweed early in its infestation, you probably will not need to establish replacement vegetation.

When a knotweed infestation is well established,

you may need to suppress the vegetation that follows as well, and establish desirable plants in that space. If you are planning on replanting the area, BE PATIENT. If you plant desirable vegetation before the knotweed is completely suppressed, it will be much harder to manage the remnant knotweed without injuring the desirable plants.

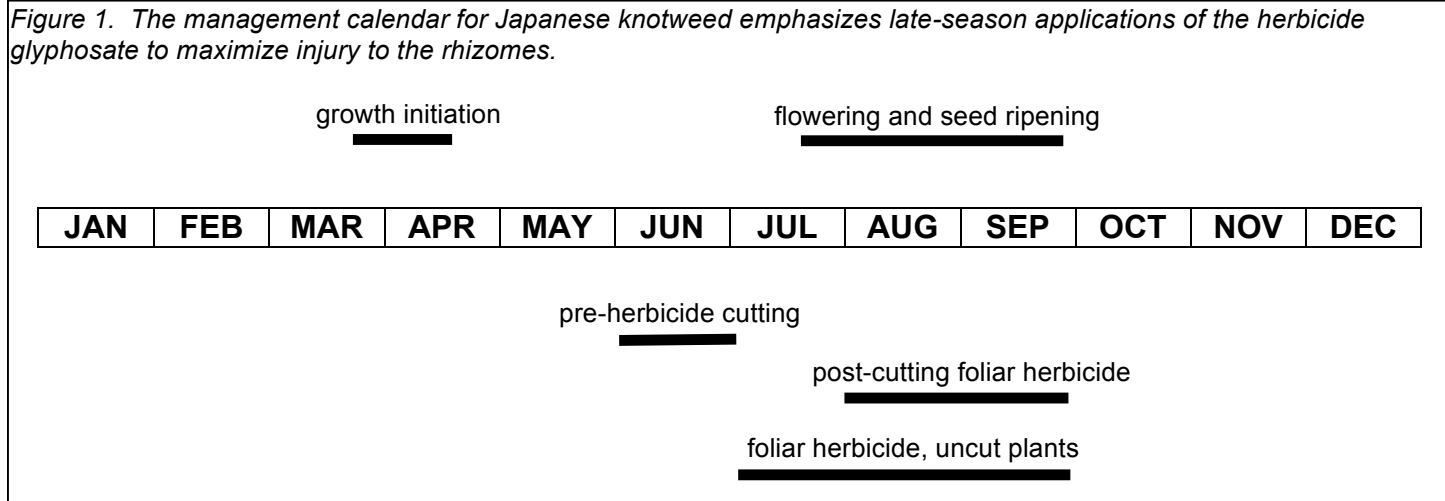


Table 1. Prescriptions for controlling Japanese and giant knotweed stress proper timing of operations to maximize injury to rhizomes. Improper timing (impatience) will result in treatments that provide 'topkill' (shoot injury) but little net effect.

timing	treatment	product rate	comments
June	cutting prior to foliar herbicide application	n/a	Cutting in June results in shortened regrowth and elimination of persistent stems from the previous season. This is a particular advantage in riparian settings, where knotweed will hang over the water. In this situation, it is impossible to treat without contacting the water with herbicide solution (therefore requiring a permit and an aquatic-certified applicator). Cutting will result in regrowth that is 2 to 4 ft. tall, which can be treated using a backpack sprayer (as opposed to a high volume application with a handgun), and without contacting the adjacent water.
anytime	cutting	n/a	Cutting does not eliminate knotweed, but it does slow its growth and lateral spread significantly. Where knotweed is adjacent to mowed areas, it should be included in mowing regimen. If you are going to treat the knotweed with a systemic herbicide, stop mowing 8 weeks prior to application.
At least 8 weeks after mowing	'Aquaneat' or 'Glyphomate 41'	4 qts/acre or 5.7 qts/acre	Use either of these <i>glyphosate</i> products to treat knotweed regrowth, waiting eight weeks after the June cutting to treat. The product rates differ because the glyphosate concentration differs. The application rates provide 4 lbs of <i>glyphosate</i> -acid per acre. Applications of 'Aquaneat' will require an additional surfactant (e.g. 'Timberland 90'). No additional surfactant is needed with 'Glyphomate 41'. Work at the early end of the operational windows so you can make a 'touch-up' application with the same treatment in September, before a killing frost.
July 1 to mid-September	'Aquaneat' or 'Glyphomate 41'	4 qts/acre or 5.7 qts/acre	Treatment to uncut knotweed should be delayed until after July 1. Unless the knotweed patches are small, this will need to be a high volume application. It is very difficult to get thorough coverage of dense vegetation that is over your head. Follow-up in September to treat misses and resprouts.

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