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Japanese Knotweed (*Polygonum cuspidatum*)

Several times a year I get calls regarding Japanese knotweed. If you don't have this plant, consider yourself lucky, but if you do and want to get rid of it, it is going to be a battle.

Identification:

This plant is a rhizomatous perennial that spreads primarily through vegetative means and forms large thick colonies¹. Its thick hollow stems can reach a height of 6 to 10 feet tall, and can be a reddish brown color. As a member of the Polygonaceae family, Japanese knotweed has the family specific character of an ocrea. An ocrea is a membranous sheath that surrounds the stem at the nodes. In Japanese knotweed, the ocrea is often short to missing. Only a thin red ring around the stem can be seen on older plants (Figure 1). Its leaves are four to six inches long, having smooth margins, and come to a point (figure 2 and 3). Greenish-white or cream flowers appear in the late summer and fall on open panicles². Japanese knotweed is dioecious, meaning that there are separate male and female plants.



Figure 1. Japanese knotweed stems. The red ring at the node is the remains of an ocrea.

The Short Story

Japanese knotweed is a perennial that can form large colonies. Its stems can reach up to 10 feet tall and resembles bamboo, although it is not. Control is difficult and requires patience. Small plants can be dug up, make sure that all of the root and

rhizome parts are excised, bagged, and disposed of. The active ingredient glyphosate and triclopyr have been reported to have an effect on Japanese knotweed as a stump cut or foliar applications. Foliar applications of glyphosate should be applied when fully leafed out and before bloom. For more detail, read on.

Spread:

A Japanese knotweed rhizome can extend up to 30 feet from the parent plant, and small fragments can give rise to new colonies by being moved mechanically or by moving water. Dr. J. Bailey of the University of Leicester called the Japanese knotweed "the largest female," reporting that genetic research suggests that all the plants in the UK were clones of a single introduced female plant³. Of the plants that I have inspected, I have yet to see seed produced. Due to its distribution in Indiana, male and female plants may not commonly come in close enough contact with each other to produce seed. Although vegetative reproduction appears to be the most common means of spread, it can also spread by seed. Research done by Bram and McNair looking at germination of Japanese knotweed seed reported that



Figure 2. Japanese knotweed leaf.

The Longer Story

Japanese knotweed is also referred to as Japanese bamboo, although it is not a bamboo at all, but a member of the buckwheat family (Polygonaceae). It gets its association with bamboo because of the stem's bamboo appearance. Japanese knotweed is believed to have been introduced into the US from

Asia as an ornamental and is now on many states' noxious and invasive plant lists. It tends to grow wild where soils have been disturbed, often found in ditches, along roadsides, railway tracks, and near drainage topography.

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germination increased from 10 to 90% from seed collected from September to November⁴.

Uses:

Some reported cases from landowners in Indiana mention that it was introduced from suspected landfill or purchased soils, in most cases it is suspected that it was planted as an ornamental. As mentioned above, Japanese knotweed was introduced into the US most likely for use as an ornamental. Its persistence, methods of distribution, and aggressive nature makes the plant difficult to contain. However, Japanese knotweed has also been identified as a source of trans-resveratrol, a compound obtained from grapes, wine, soy, and peanuts. Trans-resveratrol has been connected to slowing bone loss and having antioxidative, anticarcinogenic, and antitumor properties⁵. In Asia, the root is dried and infused into a tea called Itadori tea. The word Itadori means "well-being" in Japanese⁵.

Control:

Many people have cut back Japanese knotweed only to watch it come back with a vengeance. Continuous cutting or mowing can deplete the underground rhizomes over several years. The specimen that we have at the weed garden is kept contained by regular mowing around the plant. However, it should be mentioned that our specimen is planted in a three foot deep plastic drainage pipe and this may inhibit the movement of rhizomes. The digging up of small plants can be accomplished, but if any portion of the root system is left behind a new colony can grow back. If dug up, stems and roots should be bagged on site to ensure that they don't end up in your neighbor's yard. The use of plastic or poly-tarps or liners can suppress this plant, but if you use this method of vegetation control, buy the thickest you can find for there are some cases where Japanese knotweed has punched through. According to David Beaulieu of "About.com," the Japanese refer to this plant as "strong plant."⁶

There are a limited number of herbicides that have an effect on Japanese knotweed. Those that do will have to be

applied several times and sometimes over more than one year for complete control. Even after control is thought to be achieved, regular inspection is required to assure that it is not coming back. Always read and follow herbicides labels when using herbicides.

Glyphosate is the active ingredient in many herbicides including Roundup[®], Touchdown[®], Rodeo[®], and Glypro[®] to name a few. Glyphosate can be used in a stump cut application, where the stems are cut and the herbicide is applied within a half hour of cutting, or a foliar application. In a stump cut application, cut stems a couple of inches from the ground, then within half an hour apply a 25% v/v solution over the cut stems. New growth can be expected so it should be followed by a foliar application. Foliar applications can be applied at a 1.5 to 2% v/v solution directly to the leaves⁷. A surfactant may be required depending on the specific glyphosate product used; see specific label for details. Foliar applications should be applied when the plant is fully leafed out, but before bloom. If applying close to water use a herbicide labeled for this purpose; Rodeo[®] is one example.

Recent work in Washington State by Erin Hagen and Peter Dunwiddle looked at using an injector application⁸. This is an application where herbicide is injected directly into the knotweed stems. Glyphosate was injected into 49% of the knotweed stems at 0.03, 0.10, or 0.17 oz of undiluted. Injections using over 0.10 oz/stem provided an average of 96% control⁸. Observations were made 4 weeks after treatment. However, data was not taken for long term control and the authors questioned the use of the injector method for long term control. The observation was made that each stem might have to be injected to be completely effective.

The active ingredient tryclopyr has also been reported to be effective on



Figure 3. Japanese knotweed leaves alternately arranged.

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Always read and follow labels when using pesticides

Information listed here is based on research and outreach Extension programming at Purdue University, Ohio State University, and elsewhere. The use of trade names is for clarity to readers of this publication and does not imply endorsement of a particular brand nor does exclusion imply non-approval. Always consult herbicide labels for the most current and up-to-date precautions and restrictions. Copies, reproductions, or transcriptions of this document or its information must bear the statement "Produced and prepared by Purdue University or Ohio State University Extension Weed Science" unless approval

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Japanese knotweed. Tryclopyr can be found in the products Crossbow® or Garlon®. Like glyphosate, it can be applied at a cut stump application at 25% v/v, or 2% v/v foliar⁷. However, Garlon® should be mixed with a basal oil. Tryclopyr and glyphosate will injury or control desirable plants, apply with some precision to avoid contact with desirable plants.

There are several surveys underway to identify possible biological control agents. However, none of the investigated natural antagonists have made it to the release stage. There are several insect herbivores reported to feed on Japanese knotweed. I personally have seen Japanese beetles go to town on the plant we have at the agronomy farm, but not enough to control it and Japanese beetles are a pest in their own right. Besides, Japanese beetles will eat anything.

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