

Japanese knotweed



Llywodraeth Cymru
Welsh Government

Scientific name: *Reynoutria japonica* var. *japonica* (previously *Fallopia japonica*)

Other Schedule 9 Species: Dwarf knotweed, Giant knotweed, Bohemian (hybrid) knotweed

What is Japanese knotweed?

Japanese knotweed is the most common of four invasive knotweed taxa present in the UK (Japanese and Dwarf knotweeds being varieties of the same species):

1a Japanese knotweed (*Reynoutria japonica* var. *japonica*)

1b Dwarf knotweed (*R. japonica* var. *compacta*)

2 Giant knotweed (*R. sachalinensis*)

3 Bohemian (hybrid) knotweed (*R. × bohemica*)

Where do invasive knotweeds grow?

Japanese knotweed is able to grow in most (if not all) soil conditions found in the UK, though these species show a strong preference for man-made habitats. Common habitats where invasive knotweeds are found include roadsides, waste ground, railway embankments and cuttings, mine spoil-tips and along rivers and streams.

How do invasive knotweeds spread?

Spread occurs through direct rhizome (root) growth and via new plant growth from leaf, stem and rhizome fragments of the parent plant: a new plant can grow from pieces of rhizome as small as 1cm.

Legislation

Because of negative impacts on the UK environment and economy, all invasive knotweeds are listed under Schedule 9 of The Wildlife and Countryside Act 1981 which means it is an offence to plant or cause these plants to grow in the wild. Also, knotweed plant material is a 'controlled waste' under the Environmental Protection Act 1990 which means it can only be transported by a registered waste carrier to suitably permitted or exempt sites. Transfer notes shall be kept for each load for a minimum of 2 years.

Identification - Japanese knotweed

What does it look like?

Images A-H below show what Japanese knotweed looks like belowground and aboveground throughout the year.

Where: A = dense rhizome (root) growth at 1-2m depth; B = detail of rhizome growth; C = cross section through living rhizome (note orange colour); D = dormant stem buds in early spring; E = developing stem buds in spring; F = late spring stem growth; G = full growth in mid summer; H = dead stems during winter dormancy.



Identification - distinguishing between invasive knotweeds

Key identification features

Invasive knotweeds look quite similar, though there are clear differences in the leaves and stems in particular. All invasive knotweed stems have distinctive nodes (stem segments); one leaf is held at each node, attached alternatively upwards along the stem (i.e., the leaves are not paired opposite one another at each node).

Character	Japanese knotweed	Dwarf knotweed	Giant knotweed	Bohemian (hybrid) knotweed
Habit	2-3m in height	<1m in height	Upto 4m in height	2.5-4 m in height
Lower leaf size	10cm  10-15cm long	 <10cm long	 Upto 40cm long	 Upto 25 cm long
Lower leaf size	Broadly oval, flattened at the base – feels quite tough to the touch with a smooth lower side	Broadly oval, flattened at the base – feels quite tough to the touch with a smooth lower side	Broadly oblong, heart-shaped at the base – feels quite delicate with a furry lower side	Intermediate leaf features – lower surface of the leaf often feels quite coarse
Stems	 Red flecking	 Red flecking	 No red flecking	 Some red flecking
Flower colour & growth	 Creamy white, branched	 Creamy white, unbranched	 Greenish, branched	 Creamy white, branched
Flowering period	August-October	August-October	August-September	August-September

Invasive knotweed lifecycle - control and management

Research

In 2018 Jones et al. (2018) published the first set of results from the [world's largest ongoing field-trial on Japanese knotweed control](#).

The research tested a number of methods of chemical and physical (mechanical) control. Results were unable to show that physical methods were effective and that, of the plant protection products currently available, use of the herbicide glyphosate at the time when the plant is most vulnerable to its effects, is the most effective means of controlling invasive knotweeds. Note that the growth stages in the diagram below are approximate and dependent upon invasive knotweed species, weather conditions and altitude.

Importance of the knotweed lifecycle

Timings of invasive knotweed growth stages are shown below along with recommended timings for treatment. Results of the Jones et al. (2018) research found that glyphosate-based herbicides are highly effective only if they are applied from mid-summer into late autumn (depending on the weather). This is when resources start to be drawn down from aboveground growth into the rhizome; if these herbicides are applied sooner in the year, herbicide is not transported down into the rhizome and there is little to no impact on aboveground growth in subsequent years.

Timing of invasive knotweed growth stages and treatment application												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Growth stages: approximate - species, weather and altitude dependent												
Bud development												
Stem growth												
Green leaves												
Flowering												
Die back												
Dormancy												
Treatment application - glyphosate-based herbicide												
Biannual foliar spray							First spray	Second spray				
Stem injection												
Annual foliar spray												

Don'ts and Do's of knotweed treatment

Note

This list of Don'ts and Do's for knotweed treatment is based on research by Jones et al. (2018).

Don'ts

- Don't consider undertaking knotweed treatment yourself unless you have the appropriate skills and experience. There are anecdotal reports of mortgages being declined as a result of inadequate/poorly undertaken treatment.
- **Don't think there is a quick fix – invasive knotweeds are resilient weeds that cannot be controlled by herbicide in a single year** – any treatment strategy should be long-term and target both the aboveground and extensive belowground parts of the plant.
- Don't undertake treatment methods which are ineffective and risk spreading invasive knotweeds further. Physical control methods were shown by Jones et al. (2018) to be the least effective of the treatments tested and were also the most likely to result in further spread. Physical control methods include: cutting using hand tools, strimmer, mower, flail, thrasher; pulling; surface covering with geomembrane/geotextile; composting and burning.
- Don't try digging out the knotweed yourself, it is easy to miss parts of the rhizome and spread it and you cannot dispose of this plant material along with your garden waste – **in fact, it is illegal to do this.**

- **Don't use unsuitable herbicides** – results of the Jones et al. (2018) research showed that of the herbicide products currently available, glyphosate applied at the time when invasive knotweeds are most vulnerable to its effects is the most effective control treatment. Anyone using professional herbicides must hold a recognised professional training certificate.
- Don't use animals to control knotweed by grazing – previous research has shown that this does not control invasive knotweeds.
- Don't try untested methods of control – these do not work, but are likely to make the problem worse.

Contractor accreditations

When looking for a contractor, the following accreditations and registrations are recommended:

- Amenity Forum Membership
- BASIS Professional Register
- BASIS Amenity Training Register
- BASIS Nominated Storekeeper (NSK) Professional Register

Membership of one of the following trade associations is recommended:

- Property Care Association (PCA)
- Invasive Non-Native Specialists Association (INNSA)

Don'ts and Do's of knotweed treatment

Do's

- Ignore the hysteria – Jones et al. (2018) showed that knotweed can be controlled using glyphosate at the right time of year, though this can usually take three to five years.
- For control and management of invasive knotweeds, based on the research by Jones et al (2018), it is recommended to use one of the following control methods:
 1. **Biannual foliar spray** – half of maximum permitted application rate (see product label) applied twice per year.
 2. **Stem injection** – maximum permitted stump treatment application rate (see product label) applied once in the first year of treatment; however, it used significantly (15 times) more herbicide than either foliar spray treatment.
 3. **Annual foliar spray** – maximum permitted application rate (see product label) applied once per year; **performed almost as well as biannual foliar spray and stem injection, but significantly less labour intensive and more sustainable in the long term.**
- Monitor the ground for signs of regrowth. If regrowth appears seek expert advice. The images below show deformed Japanese knotweed regrowth following treatment with glyphosate-based herbicides.
- **Once knotweed has been effectively controlled using herbicide don't disturb this land by digging, for example, as it is likely to come back; even if the aboveground parts of the plant are dead, the belowground rhizome system may not be.**
- If you need to remove knotweed from your land quickly or need to stop it spreading below ground on to neighbouring land, contact a suitably qualified contractor to undertake physical remediation (e.g. installation of barrier membranes).
- **Use the right control methods** – it is an offence to cause invasive knotweeds to grow in the wild and they can cause a private nuisance. This means that allowing actions which cause the spread of knotweed from your land may constitute a criminal offence and/or may give rise to liability under a private nuisance claim.

What does knotweed treated with herbicide look like?

Images I-K below show what deformed Japanese knotweed regrowth looks like following treatment with glyphosate-based herbicides.



Please note that this leaflet is for information only. If you have any specific legal concerns regarding Japanese knotweed, we recommend that you take legal advice.

Copyright statement

Images contained in this document are copyright of Advanced Invasives Ltd -

© Advanced Invasives Ltd | 2020. All rights reserved.

Any redistribution or reproduction of images contained in this document in any form is prohibited other than the following:

- you may print or download images to a local hard disk for your personal and non-commercial use only
- you may copy the content to individual third parties for their personal use, but only if you acknowledge this document as the source of the material

You may not, except with our express written permission, distribute or commercially exploit the images. Nor may you transmit or store the images in any other website or other form of electronic retrieval system.

This information leaflet has been produced for the Welsh Government by Advanced Invasives Ltd

**ADVANCED
INVASIVES**

Cite as:

Jones D (2020) Public information on invasive species in Wales: Japanese knotweed. Welsh Government.

Sources cited

1 Advanced Invasives *Caerphilly CBC* (2019) 2 Akeroyd *BSBI* (2014) 3 Bailey et al. *Biol. Invasions* (2009) 4 Bailey & Conolly *Watsonia* (2000) 5 Beerling et al. *J. Ecol* (1994) 6 Brabec & Pyšek *Folia Geobot.* (2000) 7 Environment Agency (UK) (2013) 8 Gerber et al. *Biol. Conserv* (2008) 9 Grime *John Wiley & Sons Ltd* (2001) 10 HM Government (2015) 11 Hocking et al. *BSBI* (2019) 12 Jones *PhD Thesis* (2015) 13 Jones et al. *Biol. Invasions* (2018) 14 Jones & Eastwood *Pest Manag. Sci.* (2019) 15 Stace *C&M Floristics* (2019)