



Best Practice Management Guidelines

Japanese knotweed

Fallopia japonica



1. Aim of this advice

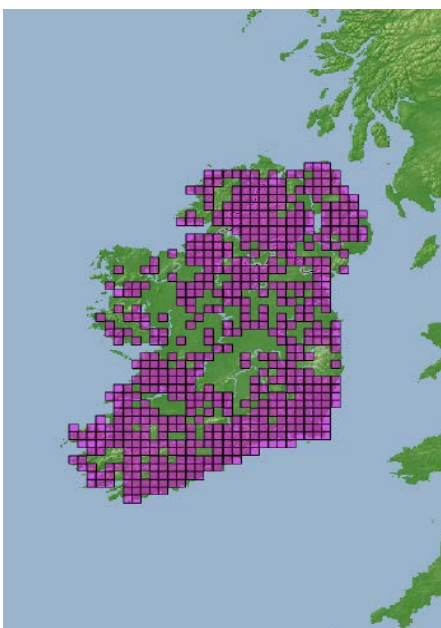
This document provides best practice management guidance on the control of Japanese knotweed (*Fallopia japonica*) on the island of Ireland.

2. Introduction

Japanese knotweed is a non-native invasive perennial (plant that lives more than one year) species in Ireland. Since it was introduced as an ornamental plant in the 19th Century from Japan it has spread across the UK and Ireland, particularly along watercourses, transport routes and infested waste areas.

It is rhizomatous (produces underground stems) with distinctive branched hollow, bamboo-like canes that can grow to over 3m in height. Red/purple shoots appear early in spring but as the canes grow, the leaves unfurl and the plant turns green. The mature canes are hollow and have a characteristic pattern of purple speckles. Flowering occurs in late summer/autumn and consists of creamy white flowers.

The underground rhizomes are thick and woody with a knotty appearance and when broken reveal a bright orange-coloured centre. During the winter the leaves die back and reveal orange/brown woody erect stems. Only female Japanese knotweed plants have been recorded to date in Ireland and although seeds are produced, they are hybrids and rarely survive. The principal means of spread is through the deliberate or accidental movement of rhizome fragments or cut stems.



Distribution of Japanese knotweed in Ireland. Source of data: National Biodiversity Network; accessed 12 November 2015.



3. Impacts

Japanese knotweed has vigorously invaded natural habitats and out competes native plants. Japanese knotweed forms tall thickets that exclude all other vegetation, shading the area below. Native plants can rarely compete with this invasive species and local plant biodiversity is reduced. Rivers, hedgerows, roadsides and railways form important wildlife corridors for native plants and animals to migrate and disperse along, and large infestations of Japanese knotweed can block these routes for wildlife.

Japanese knotweed can also seriously damage buildings, hard surfaces and infrastructure, but usually only where there are existing weaknesses. Once established underneath or around the built environment, it can be particularly hard to control, growing through concrete and tarmac and other hardstandings if any cracks exist. When Japanese knotweed colonises riverbanks, it can damage flood defence structures and reduce the capacity of channels to carry flood water.

The Global Invasive Species Programme categorises Japanese knotweed as one of the worlds 100 worst invasive alien species. In light of the economic and environmental damage associated with this species, the risk assessment process undertaken as part of the Invasive Species Ireland project identified Japanese knotweed as one of the highest risk (most unwanted) non-native invasive species in Ireland.

4. Legal status - Northern Ireland

Japanese knotweed is listed on Schedule 9 of the Wildlife (Northern Ireland) Order 1985 as amended by the WANE Act in 201. It is therefore an offence to plant or cause it to grow in the wild.

N.B. The Responsibility for dealing with invasive weeds rests with individual landowners. Strategic, widespread control is currently not the sole responsibility of any statutory organisation.

The current Northern Ireland Environment Agency policy on disposal of Japanese knotweed material and contaminated soils follows the Environment Agency guidelines and thereby places a duty of care on all waste producers to ensure Japanese knotweed is disposed of at a licensed landfill site and that the site operator is notified in advance. Landfill sites also have a duty of care to prevent spread from their sites to adjacent land or by failing to dispose of Japanese knotweed by following the correct guidelines. Remember that not all licensed landfill sites will receive Japanese knotweed waste. Contact your local authority for information on where these sites are located.

5. Legal status - Republic of Ireland

At present, there are no specific legislative provisions that directly govern Japanese knotweed control or removal in the Republic of Ireland. However, the Wildlife (Amendment) Act 2000 states that anyone who plants or otherwise causes to grow in a wild state in any place in the State any species of (exotic) flora, or the flowers, roots, seeds or spores of (exotic) flora shall be guilty of an offence.

6. Managing Japanese knotweed on site

To reduce costs and additional effort it is important to prevent Japanese knotweed from spreading around a site contaminating unaffected areas. This is best achieved by:

- Production of a detailed Japanese knotweed management plan.
- Ensuring that all relevant staff are briefed and aware of Japanese knotweed issues, the management plan and their responsibilities.

For sites that do not have Japanese knotweed present, efforts should be put in place to prevent the species establishing. The four most common ways a site can become infected are:

- Importation of infected soil.
- Contamination on vehicles and equipment.
- Colonisation from upstream areas washing Japanese knotweed material downstream.
- Illegal dumping.

7. Control and eradication

Currently there are three means by which Japanese knotweed can be eradicated from sites. These are:

- Long-term treatment with herbicides.
- Excavation and disposal at a licensed landfill site.
- Excavation, deep burial and/or bunding on site prior to treatment with herbicide.

Due to site specific variations in soil type, topography, adjacent sensitivities and degree of Japanese knotweed infestation, combinations of various control methods should be used. It is important that Japanese knotweed is controlled as soon as possible. These methods are generally expensive with costs increasing as the infestation size and duration increases.

8. Japanese knotweed on adjacent sites

It is particularly important to consider Japanese knotweed in the wider environment around a particular site. If Japanese knotweed is growing on an adjacent site, or upstream of a site on a riverbank, then no matter how good on-site Japanese knotweed control is, Japanese knotweed may recolonise recently cleared sites. Thus, an understanding of the wider context is necessary to determine if eradication or control efforts are likely to be successful. In some situations, treatment of all Japanese knotweed on site might not be appropriate due to the likelihood of re-colonisation, but infested areas within a construction footprint must be dealt with appropriately. Work in partnership with neighbouring landowners to tackle Japanese knotweed.

For all sites, the following six steps may be useful to ensure success and prevent spread:

1. Find out how much Japanese knotweed there is on the property and map it. Include at least 7m radius from stands to allow for below ground growth.
2. Ensure that everyone working on the site is aware of and adheres to good site hygiene, such as:
 - Marking out of contaminated areas.
 - Ensuring that vehicles with caterpillar tracks do not work within contaminated areas.
 - Treating contaminated soils carefully.
3. Attempt to establish the length of time Japanese knotweed has been on site. Long-standing infestations with many years worth of rhizome growth are much more difficult to control or eradicate.
4. Write a Management Plan to guide your work and make sure all staff working in the area are aware of it and Japanese knotweed. Include timeframes for planned clearance and repeated treatments.
5. Follow-up work will be necessary to ensure that any small plants and seedlings have not been missed.



9. Treatments options

9.1. Above ground removal

Cutting Japanese knotweed canes/stems will not successfully remove or reduce this species and cutting may result in material being spread elsewhere.

9.2. Below ground removal

Often it is not possible to estimate the size of large infestations until they are excavated. Research has found that Japanese knotweed can extend over 7m below ground, although there are reports of certain types of soil, such as heavy clays, that it does not penetrate. For this reason, it is recommended to dig test pits and examine for the presence and the extent of rhizomes while digging out the parent stand. Excavations should also be to 3m below the surface if removing Japanese knotweed from a site. Wherever possible, the amount of Japanese knotweed excavated should be kept to a minimum and focus should be directed to treating the Japanese knotweed in its original location.

9.3. Herbicide application

If the area of Japanese knotweed is very small, it is possible to spray the leaves and canes with glyphosate. When spraying herbicides, always follow the manufacturer's guidelines and consider if the herbicide is safe for the intended use of the site following treatment and the sites location. Several different branded herbicides with glyphosate as the main active ingredient can be used to kill Japanese knotweed, but most are systemic glyphosate based.

The majority of herbicides are not effective during the winter as the active ingredient needs to be taken up by live material (systemic). It should be noted that herbicide treatment is usually the most cost- effective method; however, it can take a long time to achieve acceptable control.

9.4. On-site disposal

If you intend to bury the dead Japanese knotweed material or dispose of it off-site, you should only use glyphosate formulations. Other persistent herbicides will not be allowed for burial under various waste regulations. Again, it is recommended that advice is taken from an expert that specialises in Japanese knotweed treatment and disposal before undertaking a spraying programme.

Burial must be to a depth of at least 5m. although all actions are site specific. This can involve large scale engineering operations and large holes within a site. Various root barrier membranes are available which can prevent Japanese knotweed penetrating. These membranes need to be specially laid under expert supervision/manufactureres guidance in order to be effective, protecting the surrounding soil.

A bund is a shallow area of Japanese knotweed contaminated soil, typically 0.5m deep. This method is used where conditions do not allow for burial and is usually only suitable for large sites, as even small infestations with limited above ground growth, can be very big. The bund method is used when it is not possible to treat Japanese knotweed in the area where it was originally located by moving it to an area within the same site that is not in use now or in the future. Bunds should be located at least 10 m away from site boundaries to prevent spread. The bund can be raised, on top of the ground or placed within an excavation. The material within the bund is treated as often as is necessary to prevent growth and spread. Bunds should use a root barrier membrane if being constructed in an area free of Japanese knotweed.

9.5. Off-site disposal

If Japanese knotweed cannot be dealt with effectively on site, it must be disposed of at a suitably licensed waste management site. The licensed waste manager must be informed that the material is Japanese knotweed. Disposal at licensed facilities can be very expensive and should be considered as a last resort. Great care must be taken when transferring contaminated material. Remember, it is an offence to cause Japanese knotweed to grow in the wild on the island of Ireland.

10. Japanese knotweed Management Plan Template

Use this template to help formulate your own management plan outlining how you are going to proceed and what you will need.

Site Name: _____

Site Manager/Owner: _____

Site details

Address:	
Telephone:	
Email:	
Agencies/persons involved:	
Date:	

Date of introduction:	
Total site area:	
Total area colonised:	
Previous site management:	

Designation	On site	Near site	None present
Details: Establish if there is a requirement to apply for a license/notify before proceeding with plan.			

Actions and resources

Management options	Responsibility	Date to undertake

Resources needed	Responsibility	Date to undertake

Monitoring and evaluation

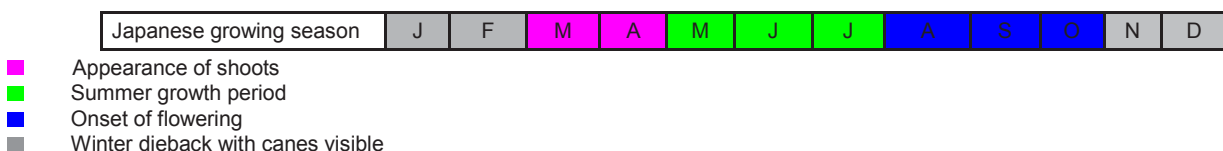
Name of person/s	Date to undertake	Report to	Additional treatments date (if required)



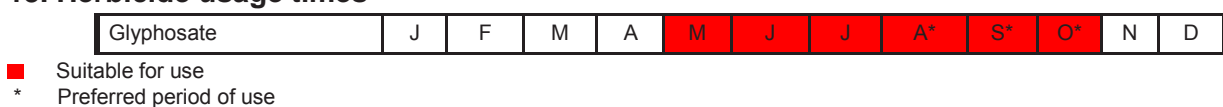
11. Summary of actions needed for effective management

1. Confirm Japanese knotweed identification.
2. Carry out a survey and produce a distribution map of Japanese knotweed on the site. Include a 7m radius away from the above ground growth in maps to help identify areas with potential rhizome growth.
3. Erect signage and close area off from unnecessary interference.
4. Consider surrounding properties and potential for reintroduction. Talk to adjacent land owners and make them aware of the issues and what you plan to do. Identify potential contamination routes to your site and mitigate against these. You may be unable to prevent reintroduction from upstream without the help of other landowners.
5. Decide should the programme aim for continuous control on a yearly basis or eradication from the site. Base your decision on an understanding of the biology, size of infestation, potential for reintroduction and other relevant sensitivities in the area.
6. Consider if you can successfully and safely carry out the work yourself, or if professional practitioners, with relevant training and certificates should undertake the work. Remember relevant health and safety legislation and procedures when working near water and on construction sites.
7. Identify if sufficient resources are/will be available to complete the work within the planned timescale. It can take 3 years and more of herbicide treatment with monitoring and follow up control for up to 5 years, so ensure you have sufficient funds to complete the work.
8. Ensure disposal options for plant material and contaminated soil are in place prior to work commencing.
9. Develop and produce a site specific control/management plan. Use the template provided in this document to guide you.
10. Monitor for regrowth and/or reintroduction during site visits. If applicable, ensure new members of staff are aware of your Japanese knotweed plan and report sightings.

12. Summary of Japanese knotweed growing season



13. Herbicide usage times



Please consider sharing your experience undertaking a management plan with others. The Invasive Species Ireland website will feature case studies to help guide others undertaking similar work.

The Invasive Species Ireland Project was undertaken, in partnership, by EnviroCentre and Quercus between 2006 and 2013.



www.envirocentre.co.uk



www.quercus.ac.uk

and is funded by the National Parks and Wildlife Service and the Northern Ireland Environment Agency.



www.ni-environment.gov.uk



www.npws.ie

For more information on the Invasive Species Ireland project please see the website at www.invasivespeciesireland.com