

Turning Japanese



How lethal injection is the best way to tackle Japanese knotweed – one of the most invasive weeds you will come across

Invasive weeds are damaging and difficult to control but Japanese knotweed, the general name given to a group of species belonging to the genus *Fallopia* (family Polygonaceae), and native to Japan and parts of China, stands head and shoulders above the rest. In their native Asian range they are primary volcanic colonisers and generally far less vigorous because plant growth is kept in check by co-evolving natural biological control agents, including arthropod natural enemies and pathogens.

The species of Japanese knotweed usually found in the UK is *Fallopia japonica* var. *japonica*, introduced from Japan two centuries ago.

Japanese knotweed continues to destroy ecosystems and urban infrastructure and is one of few

herbaceous weeds requiring direct placement of herbicide inside the plant to ensure quick complete control.

The introduction of Japanese knotweed as an ornamental plant into early Victorian gardens must have seemed like a good idea at the time but it has left a huge and growing weed legacy. Capacity for vegetative spread in situ through enormous fast growing and resilient rhizomes, made easier by the very nature of its favoured riparian and urban environments, is the secret of Japanese knotweed's success.

Dense growing stands restrict access for riverbank inspections and increase flood risks through large quantities of dead stems and leaves washed into rivers and streams. Attempts to remove established stands from riparian areas can cause instability in river banks and increase the risk of soil erosion.

Urban site infestations cause





considerable damage to hard surfaces. With stems that can penetrate concrete tarmac is no barrier to Japanese knotweed. The severity of Japanese knotweed is clear to see from the legislation used to limit spread and damage. It's scheduled under the 1981 Wildlife and Countryside Act making it an offence to plant or cause it to grow in the wild. It is also classified as 'Controlled Waste' under the Environment Protection Act (1990) and must be disposed of at a licensed landfill site in accordance with the Environment Protection Act (Duty of Care) Regulations 1991.

A multi-faceted weed

Red-coloured, spear-like aerial shoots emerge in spring - reaching 30cm by April and forming a massive foliar canopy two to three metres tall by summer's end. Plants produce large numbers of white flowers in summer but hardly any viable seed, probably due to UK climatic restrictions on sexual reproductive development.

Above ground stems die back and dry out in autumn, but overwintering rootstock and rhizomes

PAGE 28 MAIN LEFT: Japanese Knotweed produces lots of flowers but hardly any viable seed

INSET LEFT: The 'Injectordos' from Micron Sprayers in action. The robust needle is inserted into a stem near to ground level and pushed in until halted by the brass 'stopper'. The hole which is visible is now lined up with the cavity in the hollow stem. The herbicide passes through this hole and into cavity of the hollow stem.

PAGE 29 TOP LEFT: New shoots in spring look innocent enough but by summer's end they could be 3 m high

LEFT ABOVE: Even the worst native weeds like greater bindweed (vining plant in the background) are no match for Japanese Knotweed

RIGHT ABOVE: Jointed stems of Japanese Knotweed. Some of last year's stems, now brown and dead, are still very much in evidence

(underground stems) are so fast growing, all pervading and consuming that nothing else stands a chance - even during the only 'knotweed-free window' during late autumn and winter. Dead stems and leaves decompose very slowly to form a deep litter that prevents the germination of other seeds.

Failure to produce viable seed is more than compensated for by a fast growing and robust system of rhizomes allowing Japanese knotweed to exploit and dominate environments through vegetative propagation.

Rhizome systems may extend up to 7m from the parent plant and to a depth of 3m. Rhizome fragments as small as 0.7g can generate new plants and pieces of fresh aerial stem will grow shoots and roots in soil or water. Plants achieve up to 3m of aerial growth and 6m of rhizome growth in a single growing season.

New shoots arise from the tiniest pieces of rhizome and cut stem-sections will root at the nodes. Crowns can survive drying or composting to produce new canes once in contact with water. Attempts to mechanically control Japanese

knotweed using strimmers, flails or diggers can aggravate spread.

Herbicide application

Application of herbicide is the only sure and safe way to manage Japanese knotweed but this is easier said than done due to the sheer size and resilience of its rhizomes. A number of herbicides are effective against Japanese knotweed but by how much and for how long depends on the application technique used. Application technique will ultimately determine the success of chemical control against Japanese knotweed.

Spraying with contact herbicide will burn off the leaves but rhizomes survive and produce new stems. The only sure and safe way to dispatch Japanese knotweed is by placing a systemically acting herbicide (most usually glyphosate) into the plants by injection of intact standing stems low down and at the most appropriate time of the growing season.

Target area is the lower part of the aerial stem to minimize the distance for downward translocation into the rhizome system. Best time is

from late summer through autumn when rhizomes become sinks for soluble food and nutrients which is translocated downwards from the leaves before these senesce and fall off. Injected systemic herbicide is subject to this same strong basipetal (downward) translocation into the rhizome system which is subsequently killed.

Death by lethal injection

Japanese knotweed’s hollow stem is its ‘Achilles Heel’. Professional stem injection applicators designed and dedicated to control of hollow-stemmed weed plants such as Japanese knotweed are available.

Stem injectors used to control Japanese Knotweed include:

- ‘Injectordos’ from Micron Sprayers at Bromyard, Herefordshire.
- ‘JK Injection Tool’ from Stem Injection Systems at Stockport, Cheshire
- ‘Stem Master’ from Nomix Enviro at Andover, Hampshire.

The advantages offered by the stem injection technique focus on effectiveness, ease of access and use and all round safety for operators and the environment.

Use of these relatively lightweight and small applicators mean operators can access and treat the most dense stands of Japanese knotweed. By providing a closed delivery system the technique can be safely and effectively used at any time including during rainfall. The closed highly targeted delivery system means there is no danger of product escaping into the environment to damage nearby plants. Also, by delivery of a measured dose into the hollow stem, the injection technique can usually achieve ‘death by lethal injection’ in one application.

Stem injection does a truly ‘inside job’ on Japanese knotweed and is used with good effect on other invasive weeds such Himalayan balsam and Giant Hogweed which also have hollow stems. Stem injection is something most golf courses can carry out using their own resources.

However, taking into account equipment, expertise and safety – including the need for an appropriate operator’s licence if application is made near water and safe disposal of any debris - then employing the services of a specialist company advertising this expertise may turn out to be the most convenient and effective option.

RIGHT: Japanese Knotweed forms extensive dense weed stands
BELOW: Close up on the heart shaped leaves and white flowers
BELOW RIGHT: Stem injection can also be used to control other weeds with hollow stems like Himalayan Balsam shown here alongside a stream on a Hertfordshire golf course

about the author



Dr Terry Mabbett

Dr Terry Mabbett is a disease, pest and weed control specialist with forty years international experience covering research, advisory and journalism. His current fields of focus are professional turf and alien insect pests and pathogens of Britain’s native and naturalised trees.



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