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Field Trials for Containing Japanese Knotweed using DuPont™ Plantex® Platinum

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DuPont™ Plantex®

There are many methods used to control or eradicate invasive weeds such as Japanese knotweed, all of which have varying levels of efficacy depending upon site conditions.

Tough man-made membranes are often used to supplement these methods to contain knotweed spread in either the vertical or horizontal plane. Vertical membranes have been used successfully in the past when



installed underground to prevent spread of knotweed from one parcel of land to another.

Horizontal membranes are also used to suppress weeds. For highly aggressive and destructive weeds such as Japanese knotweed horizontal membranes buried below surface are sometimes used in an attempt to stop any remaining viable knotweed growing to the surface. Examples include locations where it is not possible for technical or economic reasons to remove or kill all of the knotweed crowns and rhizomes, and where a compromise control solution is acceptable. It is of course imperative that a suitable membrane specification is selected.

Membranes that are effective at controlling knotweed tend to be impermeable to water, the rule-of-thumb being that if water can't get through then neither can knotweed shoots.



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Installing large impermeable horizontal membranes in the ground creates problems with land drainage.

DuPont, leaders in membrane innovation, approached Environet UK LTD in 2017 with their new product "Plantex® Platinum", a water permeable membrane claimed to control Japanese knotweed without the drainage problems associated with installing impermeable membranes in the ground.

Environet tested the product during the 2017 growing season at their research site in Sussex, England. This article summarises the results, and provides guidance to those considering the use of membranes to control Japanese knotweed.

The Trial

A 10m x 5m sheet of Plantex® Platinum was laid over an area of ground known to contain active Japanese knotweed crowns and rhizomes in March 2017. To put the product under extreme test conditions no attempt was made to remove any of the crowns or rhizomes prior to installation, neither was any ground preparation carried out,

The membrane was covered with a minimum of 100mm clean topsoil to hold the membrane in place during the trial period. The area was monitored during the 2017 growing season to check for knotweed growth. The membrane was lifted in November 2017 to inspect for any knotweed

penetration through it, and to establish the health of the crowns and rhizomes under it.



Plantex® Platinum laid prior to covering

Results

During the monitoring period no observations of Japanese knotweed emerging from the area were noted. New growth was however encountered around the periphery. When the membrane was lifted, presence of live crowns and rhizomes were evident, characterised by new white shoots, similar to bean sprouts, and rhizomes with live buds and orange internals when broken.

In some locations the membrane had been damaged, with one small puncture hole approximately 10mm in diameter, and slight delamination and fibre release where the membrane had been stretched.

Japanese knotweed had not penetrated the membrane other than in areas where the integrity of the membrane had been



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compromised. New bean-sprout like growth was evident running horizontally immediately under the membrane.

Discussion

The results indicate that Plantex® Platinum is effective at controlling Japanese knotweed, and backs up the claims of the manufacturer. As is the case with all membranes, they are reliant on their integrity not being compromised, and being installed correctly.

Plantex® Platinum does not kill the root or rhizome system, at least in the short term. Bearing in mind that Japanese knotweed is known to be able to stay alive in a dormant state for at least 20 years, installation of a membrane such as this should be considered to be a method of “control” as opposed to one of “eradication”.

Plantex® Platinum encourages the lateral spread of rhizomes under the barrier. Over a very large area it may be that some of the rhizomes exhaust themselves in their quest for sunlight and subsequently die. However, rhizomes near the edge are likely to emerge at the periphery

with new shoots, as was experienced in the field-trial. For this reason we advocate the use of sacrificial zones around the periphery of the membrane, accepting the emergence of Japanese knotweed for subsequent treatment in these areas. We strongly recommend against installing horizontal membrane up to a critical area not considered a sacrificial zone e.g. a neighbouring property/boundary, as the barrier itself will contribute to the spread into the critical area.

The integrity of the membrane is paramount; it should not be put under any undue stress or strain during or after installation, as effective repairs are difficult to make.



Above is an example of a failed attempt to control Japanese knotweed using concrete. Installation of Plantex® Platinum under the concrete would have been a wise precaution.



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The membrane should be laid on prepared ground absent of any sharp objects. The membrane should be covered with suitable fill material to an appropriate depth to ensure the membrane is not lifted by the effect of plant growth pushing upwards from under it.

No machinery that could damage the barrier should be permitted in the area. The depth of the membrane needs to be determined depending on site conditions, and should be recorded. A "No-Dig" zone should be established to protect the membrane from future damage. Any piling, boreholes or other such activities which would penetrate through the membrane should be prohibited.

This field-trial has not examined the performance of the product over an extended time period. It is possible that certain factors in the ground, for example ground contamination, burrowing animals etc. could result in part-failure resulting in incomplete control.

Over large areas it will be necessary to join sheets of membrane together. The integrity of the joint is as important as that of the membrane. Membranes are often joined using either a thermo-welding technique or with a heavy duty butyl tape. Both methods, if done correctly and in accordance with the manufacturer's instructions, should provide the required bond.

Conclusion

Plantex® Platinum, like any other membrane, is not a substitute for established knotweed "eradication" techniques, but could successfully supplement them where only "control" is required.

When laid as a horizontal membrane in the ground, Plantex® Platinum provides an effective control measure against Japanese knotweed. It alleviates the problems of drainage associated with alternative impermeable membranes, a major advantage for specifiers and their clients where large areas of membrane are intended to be laid in the horizontal plane.

The level of control provided depends upon the integrity of the membrane and any joints in it. It's important therefore that the product is installed correctly and that the installer is able to provide warranties in addition to those of the manufacturer to also provide cover for the installation works.

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