

# Control that “Sticks”

## *Invert Emulsion Controls Japanese Knotweed in Roadside Areas*

Japanese knotweed infestations spring up among desirable grasses in Johnson County, shading out the competition and gaining new ground each year.

**IF** you're driving down a road in southeastern Iowa and smell citrus, it's probably because Chris Henze and his Johnson County road crew are nearby, battling a patch of Japanese knotweed. Their weapon: A thick concoction that smells like lemon and sticks like glue.

This highly specialized herbicide application technique attacks Japanese knotweed infestations without jeopardizing desirable plants along the right-of-way – or valuable crops growing just over nearby fences.

“We don't have large infestations of Japanese knotweed acre-wise – but we have 16 infestations that keep spreading each year,” said Henze, Weed Commissioner for the Johnson County Secondary Road Department. “This plant is one of the toughest out there, so we're giving its eradication a lot of personal attention.”

Along some stretches of local rights-of-way, thickets of knotweed grow higher

than the tallest corn stalks in adjacent farmers' fields. The dense shrubbery can shroud driveway and intersection sightlines, endangering the safety of drivers.

Knotweed also threatens the entire ecosystem around it because it forms massive monocultures and shades out more desirable vegetation. Beneath this invader's canopy, the ground is often bare, creating additional risk of soil erosion. Low-growing plants don't stand a chance against the deep shade knotweed creates.

Japanese knotweed stems are thick, thus giving rise to its other common name, Mexican bamboo. However, it's not related to bamboo and it didn't come from south of the border. Knotweed plants first were introduced from Japan into the United Kingdom, then into North America in the 19th century as a landscaping ornamental.

The plant quickly grew out of control, and today is listed by the World Conservation Union as one of the world's

100 worst invasive species.

Japanese knotweed seeks sunny, moist areas like riverbanks and roadsides. It spreads by rhizomes, so mowing above-ground stems just helps it move from place to place. Its resilience is also bolstered by its strong, vascular root system. Henze has found roots as large as three inches in diameter.

“Our mowing program is still the mainstay of roadside maintenance for us,” Henze said. “But if we don't flag knotweed infestations, our operators will mow it along with everything else in the right-of-way, which actually spreads the rhizomes and leads to new infestations. We have to keep a close watch to be sure we don't make it worse.”

### **Finding the Right Chemistry**

Fighting this defiant invader has required some uncommon tactics. Henze and his team studied many options and tried several solutions.

“Since our infestations are small and spread out across our road miles, blanket herbicide applications on large sections of our right-of-way don’t make sense,” Henze said. “They’ll cost the taxpayers a lot of money and do little to control the weeds.”

Johnson County tried a “flame weeder,” which burns off the tops of the plants, causing them to wither. But that process proved time-consuming and potentially dangerous. Road crew workers had to handle the flame weeder carefully to avoid creating fire and smoke hazards that could affect themselves, drivers on the roads and surrounding private lands.

The control technique also failed to attack the heart of the plant – the underground rhizomes that give Japanese knotweed its strength.

The Department decided to use selective herbicide applications for knotweed, but needed to determine the best product to use and the best way to apply it. The solution had to fit multiple criteria: It had to control knotweed without damaging neighboring row crops, aquatic areas or desirable ecosystems



**Japanese knotweed treated using the invert emulsion technique is completely covered, maximizing control of the plant from leaf to root.**

already in place.

It was a challenge Henze was up for, especially when he turned to his industry partners. Johnson County has a decades-long relationship with Chem-Trol, Inc. a QVM Certified Applicator company headquartered in Kansas City, Kansas.

“Chem-Trol’s weed-fighting experience in the region is unmatched,” Henze said. “They have always provided us with great advice, and they are constantly looking for ways to get great control in the most cost-effective way possible for

customers like me.”

Steve Hansen, Chem-Trol’s representative in Iowa City, helped the Johnson County crew develop an herbicide prescription that fit their needs.

“Japanese knotweed infestations are rampant in the Midwest,” Hansen said. “We have developed a solution that fits a broad range of landscape types, including right-of-way areas like those in Johnson County, so it was a great opportunity to collaborate.”

Because many of the ditch areas infested with knotweed in Johnson County carry water during wet seasons, Hansen recommended Habitat® herbicide. Produced by BASF, the herbicide is labeled for use in aquatic settings and provides excellent long-term control of Japanese knotweed. It eliminates spread of the weed by controlling it from the roots and rhizomes up.

“We were originally using Rodeo® or Garlon® 3A because the Japanese knotweed hangs over wet ditches in many cases,” Henze said. “But because those products don’t provide residual control, they just didn’t give us the long-term



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**Invert emulsion applications of Habitat herbicide for Japanese knotweed control allow roadside workers to target undesirable weeds without damaging desirable grasses and wildflowers.**

control we were looking for, so we were very excited to get Habitat out in the field.”

#### **Invert Emulsion Yields Results**

Applying the herbicide to the knotweed effectively and efficiently was no small task. Farm fields and Iowa City suburbs flank the ditches and rights-of-way that are infested with knotweed, requiring absolute accuracy. The dense walls of leaves and brush also form a barrier to getting the product on the stems and keeping it there long enough for optimal control.

Chem-Trol recommended an invert emulsion application technique, something not all that common in roadside herbicide applications. In a typical herbicide application, the surfactant mixes with the herbicide and comes out of the nozzle in liquid form. In an invert emulsion application, the herbicide mixes with the surfactant, in this case a heavy lemon oil, and forms a much denser substance as it leaves the nozzle. It is this weight and structure that gives the mix its “invert” name.

“The liquid herbicide inverts from the droplet form you’d find in a regular spray to a thicker substance, a lot like mayonnaise in consistency,” Hansen said. “This makes it easier to manage for targeted applications.”

The lemon oil surfactant provides

weight and density to the tank mix, allowing applicators to zero in on knotweed in areas where crops or other desirable vegetation are nearby. It also sticks to and covers leaves and stems, helping get the active ingredient all the way into the root system quickly and efficiently.

The treatments are conducted using a hand sprayer attached to a truck tank. Because it is so heavy and sticky, invert emulsion makes it possible to spray in windier conditions, because the risk of drift is virtually eliminated by the weight.

“Our goal is to keep applications at zero-drift level. It really helps the community feel confident about what we’re doing,” Henze said. “They know we respect their property and are reminded of all we do to earn their trust.”

#### **Right on Target for Restoration**

Johnson County has had the most success with the herbicide when applied in early spring, typically April and May. Using the uncommon invert emulsion application technique has yielded great results.

“In smaller, younger patches, we’ve been able to eliminate Japanese knotweed in just two years of treatment,” Henze said. “Even patches that are well established can be controlled in two to three seasons.”

When treated knotweed is reduced to skeletal remains during the dormant

season, county crew members often burn off the litter to make way for next year’s treatment.

“Doing a burn in the fall gives us better access to any new knotweed sprouts that come up in the spring. If none appear, we can reseed or let native plants get better access to sunlight and soil nutrients,” Henze said. “We also can prevent some of the erosion that could occur if the bare ground we typically find under a knotweed infestation is left alone.”

After the fall burn, county crews typically reseed native warm-season grasses like Canada wild rye and big and little bluestem, wildflowers like black-eyed Susan, and forbs like partridge pea. These desirable plants will fill in barren soil to keep ditch banks from eroding, and provide better habitat for songbirds, game animals, rodents, butterflies and snakes.

Local residents love the restored landscape almost as much as the wildlife. “When we added the spray program, we were a little worried about how landowners would feel about it,” Henze said. “But they have responded very well, and we make every effort to keep them informed about the treatments every year.”

While Henze has no illusions about totally eradicating Japanese knotweed from Johnson County rights-of-way, he is extremely pleased with the success of the program and of the recognition he has received for his efforts. The department recently received a QVM Project Habitat Award for its innovative use of invert emulsion for knotweed control and ecosystem restoration.

“Roadside vegetation managers should be keeping a close eye on what Chris Henze and his department are doing,” Hansen said. “It’s a great template for success, and one I expect to see more use of in the region and beyond.” **L&W**

*For more information, contact Sheri Hansen at Padilla Speer Beardsley, (612)455-1707 or visit the website: [www.vmanswers.com](http://www.vmanswers.com).*