

Controlling Roadside Vegetation

in the Midwest

BY RANDY LUSHER



Winning the fight to keep invasive weeds out of right of ways

Invasive weeds are supreme survivors, as they store nutrients for long periods of time and produce a labyrinth of roots that hinder other plant growth. If there's soil, they will grow.

Invasive weeds infest roadside right of ways where land is often disturbed from road construction and has little or no native plant growth. That makes it easy for weeds to take over the roadside, causing problems for drivers and road maintenance workers. If weeds are not controlled, they block traffic signs, creep under paved roads and cause cracks, and out-compete native plants and flowers until roadsides are imbued with dense patches of a single species.

It is the job of roadside vegetation managers to control weeds that have infested or emerged in right of ways. Many transportation departments use herbicides in conjunction with other removal techniques — such as mowing or burning or combinations of them based on their needs. Roadside vegetation managers in Illinois, Missouri and Nebraska have worked for years to regain control of their right of ways and they are seeing success.

Targeting Teasel in Illinois

The Illinois Department of Transportation (IDOT) has more than 16,000 miles of roads in a state nearly 400 miles long and 220 miles wide. Maintenance Manager Craig Mitckes works hard to maximize his vegetation management budget across the entire state.

"We get about \$750,000 per year for the entire state for vegetation management," Mitckes said. "When you consider how large the state is — and that we have nine district offices that use that budget — you can see how far we have to make our dollars stretch."

Mitckes is responsible for managing all of the roadside districts and rest areas in Illinois.

"I allot money to each district for programming, but the districts design and implement their own plans," he said. "Given that Illinois encompasses five different plant zones, it's important that the districts have the freedom to create programs that work best for them."



Dried mature teasel infests private land outside the IDOT treatment boundary.

In District 3, southeast of Chicago, District Roadside Development Architect Kathy Cindrich has developed a program to manage problem weeds in her roadside areas and along guardrails.

“Our biggest problem right now is teasel. This plant is tough to control, and has become a big challenge for us in the past few years,” she said.

The state’s limited ability to control the weed on private property is another factor increasing its spread.

“Farmland, utility right of ways and other types of property are all infested. Since teasel is not yet a noxious weed in the state of Illinois, we cannot force anyone to address the issue on their private property,” Cindrich said.

Common teasel is a biennial plant that grows as high as 6 feet, forming impenetrable weed patches that crowd out native vegetation. Its stems are coated with fine prickles and its flower heads have sharp spikes. Even its leaves have sharp bristles, making it impossible to touch the plant anywhere without receiving a stab. Cattle and other grazing animals will not eat it, so if it spreads from right of ways to pastures, the farmers have a problem, too.

“Teasel is a tough plant to kill,” Cindrich said. “Burning doesn’t control it, and because Illinois state law only allows us to mow the first 15 feet of a roadside ROW, herbicide applications are the best way to get full control. Teasel is also phototropic, which means that when you mow it, it will regenerate, and no matter which direction it is laid after mowing, it will eventually move toward the sun to resprout.”

A teasel plant can produce more than a thousand easily-spread seeds, so the mowing crews have to carefully clean their mowers after working in an infested area. On average, the IDOT spends \$40/acre on mowing, with some areas requiring two or three mowings per season. However, the number of mowings can be decreased by adding herbicide treatments to the program, thereby allowing Mitckes to stretch his limited budget dollars further.

“With properly timed and appropriate rate applications of herbicides, we can reduce the number of times we have to mow per year,” Mitckes said. “This is because native plants don’t get as tall as teasel and other invasives, so if we can keep weed height under control using herbicides, we can mow less frequently.”

For the teasel problem in her district, Cindrich and her teams have used Overdrive® herbicide, from BASF Professional Vegetation Management (ProVM). It has not only helped control teasel, but is also helping the district manage its budget.

“At our current funding level, we’ll never get all the invasive species under control,” Cindrich said. “But if I can keep the weeds in check, if the populations don’t spread over the course of the season, then I feel like I’ve succeeded.”

Mitckes is working with the Illinois Department of Natural Resources (DNR) to get teasel and other plants declared noxious in Illinois.

“When we have an avenue of enforcement through state regulation, we can get much better control of teasel around Illinois,” he said.

The Illinois DNR helps IDOT create mowing and spraying schedules that avoid nesting and hatching times, and determine which native flora can be planted in various locations in order to protect existing habitat in those areas. They are also quick to alert IDOT when they see a weed infestation.

“The Illinois DNR has biologists who are working closely with many different types of plant materials,” Cindrich said. “They often inform us of new vegetation problems that we may not come



across in our day-to-day work. With so much ground to cover, we can't get too deeply involved in any one area. The resources that the DNR shares with us really help us stay ahead."

IDOT also helps the DNR restore habitat and forage quality for animals by removing invasive species and re-establishing native prairie grasses along roadways.

"By eliminating invasive weeds like teasel, we can help replace the insects and plants needed by species of birds, reptiles and amphibians, as well as small mammals, which makes the prairie restoration goal even more attainable and richer for the animal life," Mitckes said.

Mitckes and Cindrich said they've had great success with selective herbicides that do not negatively affect native plants or wildlife and will continue using these products to control invasive weeds on their roadsides.

Fescue Suppression Strategies in Missouri

Tall fescue is a cool-season perennial grass that is beneficial for roadside right of ways when properly controlled. Its extensive root system provides good erosion control, and it grows early in the year when other plants are still dormant. However, fescue is a highly competitive species and can quickly strip an area of its biodiversity. It can also cause sight line concerns when it is not frequently mowed or controlled by other means.

Mowing becomes expensive for the Missouri Department of Transportation (MoDOT), which has to maintain nearly 32,000 miles of state highways — including historic Route 66.

MoDOT was mowing as many as 250,000 acres three or four times a year, at average mowing costs of \$40 to \$45 per acre. Roadside Management Specialist Rand Swanigan and his team decided to try another vegetation control method: plant growth regulators (PGR).



Black-eyed Susan and other desirable wildflowers flourish freely on PGR-treated roadsides throughout Missouri.

"I've worked with MoDOT for 13 years, managing vegetation on Missouri roadsides," said Swanigan. "Our PGR program has allowed us to reduce mowings and transfer labor to other priorities — which is the driving force behind the nearly \$3 million MoDOT has saved since introducing the program in 2003."

MoDOT's PGR program has improved worker safety, reduced labor needs and created more efficient budget use.

"The cornerstone of our program is using a herbicide that provides seedhead suppression, which allows fescue to thrive while keeping all of the vegetation at a safe, manageable height," said Swanigan. "The PGR program has allowed us to decrease our mowings from three to four times a year to one or two cycles annually."

Less mowing has also improved safety conditions for roadside employees because they do not need to mow as often along perilous highway areas where traffic speeds past them.

MoDOT was honored for its achievements in 2005, when it received the National Roadside Excellence Award from the National Roadside Vegetation Management Association. The award is one of four given annually to the city or county that demonstrates best practices and innovative management of roadside vegetation.

Swanigan and his team plan to continue leading Missouri's 10 districts in using the PGR vegetation management program, helping to keep Route 66 "the highway that's the best" and helping others achieve the same standard.

Battling Noxious Weeds in Nebraska

As Agronomist for the Nebraska Department of Roads (NDOR), Dick Gray has spent more than four decades battling invasive and noxious weeds along Nebraska state highways. Until last year, Gray thought he'd never achieve long-term control of one of his toughest and most resilient adversaries: leafy spurge.

A deep-rooted perennial weed, leafy spurge poses a significant environmental hazard because it chokes out desirable forbs and vegetation. Once leafy spurge has taken hold, it can destroy grazing land, reduce cropland productivity and degrade wildlife habitat. According to the USDA, leafy spurge currently infests at least 5 million acres of land in 35 states, costing agricultural producers and taxpayers hundreds of millions of dollars in production losses and control expenses.

"Leafy spurge spreads like a virus," Gray said. "When it reproduces, the weed's seed capsules explode and can project seeds as far as 15 feet from the plant."

Because the seeds remain viable in the soil for up to eight years, water, wildlife, vehicles and humans can unknowingly carry the seeds to different locations. The weed's extensive and deep root system (extending 15 feet or more) contains strong nutrient reserves, allowing leafy spurge to withstand damage from burning, grazing and mowing.



Leafy spurge has a milky sap that causes blistering and skin irritation and is poisonous to some animals.

Emerson Steele, a Maintenance Superintendent for NDOR's eighth district, knows that leafy spurge requires aggressive treatment, and even after herbicide applications, can still emerge after five to six years of dormancy.

Steele typically relies on recommendations from Gray to find the best weed-management techniques. For many years, the most effective treatment was a tank mix of Vanquish® and 2,4-D, which Steele and his crew applied in the spring, after the first mowing cycle. While the treatments controlled leafy spurge throughout the summer, the weed came back by the next spraying season. Even in locations where leafy spurge appeared to be eradicated, the weed would reappear within two years.

"When a landowner or local resident sees spurge blooming along the roadside, we get a call," said Steele. "So we always know what's grown back."

Using a gallon of Vanquish and 3.5 quarts of 2,4-D for each application, Steele spent about \$18.21 per acre, on top of annual mowing expenses. For a treatment that never provided complete control, the efforts proved to be expensive over the long term.

NDOR's eighth district also uses Tordon® herbicide to control leafy spurge, but it can only be used in certain areas of Steele's territory because most of the district's leafy spurge is concentrated in an area with high water tables.

"Tordon isn't labeled for use in areas where it might translocate into groundwater, which means we're pretty limited in where we can apply it," said Steele. "We can't use Tordon in large areas of our district where spurge is the most concentrated, because those areas sit on top of key water tables."

Frustrated with simply standing their ground against the invasive and rapidly spreading noxious weed, Steele and Gray collaborated with the Nebraska State Weed Control Association's Leafy Spurge Task Force (LSTF) to find a way to eradicate spurge once and for all. The task force organizes annual meetings for county weed superintendents, NDOR workers and university extension specialists to educate them on the danger of noxious weeds and explore the best available methods for control.

At the task force meetings, Gray heard about Plateau® herbicide from BASF Professional Vegetation Management. Not only did weed superintendents recommend it, but word-of-mouth was consistently positive.

In 2003, Gray advised Steele to replace his usual leafy spurge routine by applying 8 ounces of Plateau in the fall and then spraying 2,4-D throughout the year as needed. The results spoke for themselves. Most notably, in spring 2004, Steele found that he didn't need to apply herbicides in right of way areas he treated the previous fall.

"This is head and shoulders above what we were using before," Gray said. "Vanquish and 2,4-D were only temporarily stunting the weed, so it returned every year. We've seen a marked improvement with this new herbicide. We're closer to eradication than we've ever been."

Part of the effectiveness of Plateau comes from its ability to impact leafy spurge's deep root system. After application, the herbicide translocates throughout the weed, reaching the roots to block the spread of nutrients – resulting in quick, effective control. The herbicide also provides long-term control by preventing the re-sprouting of auxiliary buds. As Gray and Steele witnessed after their fall application, the herbicide's residual control can also stop seedlings from germinating in the spring.

It is also a benefit that the herbicide affects an enzyme found only in targeted plants, not humans, animals, insects or desirable vegetation. Gray said it hasn't damaged any of the native grasses or other plants in Nebraska's landscape. Species such as sand lovegrass, switchgrass, prairie cordgrass, bluegrass, black-eyed Susan and goldenrod (Nebraska's state flower) all flourish in the 30-foot right of way and roadside areas managed by NDOR with Plateau.

After studying and caring for Nebraska's roadsides for more than 40 years, Gray is relieved to have finally found a tool strong enough to eradicate a stubborn enemy. By winning the fight against leafy spurge and other invasives, he and his counterparts in Illinois and Missouri are achieving their vegetation management goals, stretching their budget dollars and improving the prospects for native vegetation to flourish.

"I'm retiring in a few months," said Gray, "and it's good to know I'm leaving the program in capable hands." ■