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Fighting Tough Weeds  
In North Dakota

Innovation and  
Partnership

**Unlock**  
Prairie  
Potential





## Innovation and Partnership

# Unlock

Fred Circle and his company, FDC Enterprises (FDC), have developed a highly efficient and effective system to restore native grasses under the federal Conservation Reserve Program (CRP). Hard work, a passion for perfection and the drive to partner for innovation allowed the company to achieve **Quality Vegetation Management™** (QVM) Certified Applicator status in 2006 and 2007, and have made FDC the largest installer of CRP acreage in the United States.

## Prairie Potential

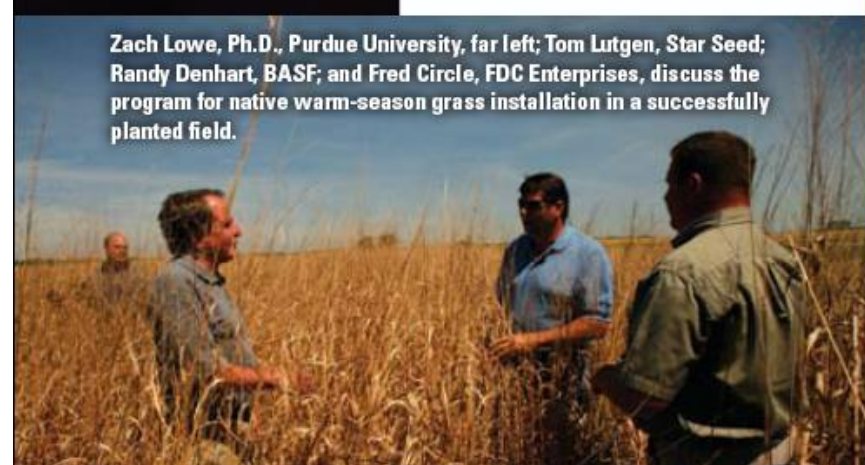
Circle's dedication to excellence in CRP installments shows in every project he manages. One weed in a restored field is one weed too many. To that end, Circle and the FDC team created an entirely new level of best practices fueled by highly strategic partnerships.

Collaboration with leaders from Purdue University, BASF, Townsend Chemical and Star Seed built a start-to-finish CRP installation program for the Midwest that is second to none. From research to weed control to seed selection, this team combines its strengths to make a great restoration program even better.

### CRP Protects the Prairie

Original settlers in the Midwest looked across grassland prairies that stretched to the horizon. Bunch grasses, tall forbs and scattered shrubs offered habitat to native birds and animals, providing the food and cover needed to flourish. But as prairies became farm fields, species were forced to look elsewhere for habitat.

In more recent years, when acreage fell fallow, it also often fell prey to invasive weeds. By the second half of the 20th century, grasses such as big and little bluestem, Indiangrass and switchgrass, and native forbs were replaced by monocultures of fescue and other undesirable plants. Unlike the diverse native prairie grasses, invasives often don't provide the needed variety in cover heights, and nesting and forage types.



Zach Lowe, Ph.D., Purdue University, far left; Tom Lutgen, Star Seed; Randy Denhart, BASF; and Fred Circle, FDC Enterprises, discuss the program for native warm-season grass installation in a successfully planted field.





These partners, responsible for more than 70,000 acres of successful CRP plantings in the Midwest, deal with the challenges of native warm-season grass installation from start to finish. Back row, from left: Zach Lowe, Ph.D., Purdue University; Greg Ressler, Townsend Chemical; Fred Circle, FDC Enterprises; Randy Denhart and Dan Beran, Ph.D., BASF. Front row, from left: Nick Hoffman, Eco-Pak; Tom Lutgen, Star Seed; and Jim Brayton, Townsend Chemical.

Now, unproductive croplands are being converted back to native prairies as part of the federal CRP program. CRP gives farmers access to cost-sharing and technical support for land management projects designed to reduce erosion, and protect and restore wildlife habitat in previously unproductive areas.

CRP provides landowner incentives to build buffer zones between production farm fields and wildlife areas, and to establish habitat areas. Maintaining these acres is subsidized by federal rental payments and easements. In the Midwest, CRP programs focus primarily on restoring native warm-season grass prairies.

### Expert Partners at Every Stage

More than 80,000 acres in Ohio and surrounding states have been converted to prime wildlife real estate by FDC. The company helps landowners establish native prairies in CRP areas through weed control and native planting, and also helps maintain established native grasslands.

Developing a highly effective CRP program and establishing native warm-season grasses — quickly and permanently — is a complex process. Restoration involves removing unwanted vegetation, preparing ground for new plants and successfully starting prairie grass seeds. All of this must be done over several seasons. Even FDC didn't have the process down to a science the first few times they tried it.

"The first year, we were having about a 40 percent success

rate," Circle said. "But we knew we could do better — we just had to figure out how, and we couldn't do it alone." So chief operating officer Kevin Mason and Circle devised a plan of action.

### At the Drawing Board

The team started its redevelopment of native warm-season grass planting practices at Purdue University in West Lafayette, Ind., where they joined forces with Zach Lowe, Ph.D., a habitat specialist for the Purdue University Department of Forestry and Natural Resources.

Lowe's research focuses on integrated vegetation management techniques for invasive weed control. "In Indiana, Michigan and Ohio, it is absolutely essential to get weeds under control before installing wildlife habitat practices," Lowe said. "That means carefully assessing the invasive plant mix on the site and what combination of methods is effective to control them."

Using test plots located in the Purdue Wildlife Area, Lowe and Circle studied different weed mixes that could threaten the success of new native warm-season grass plantings. They then tested different treatment activities on the weed mixes to determine which control efforts work best in the Midwest, and how to turn test plots into grasslands on a large scale.

Based on the research, Lowe recommended a combination of mechanical removal of invasive weeds and herbicide treatments before planting native warm-season grasses on CRP lands.



Mechanical treatments can be effective up front, and following them with herbicide applications can catch any surviving invasive weeds before they emerge.

### Herbicide Plan Design

To define the right herbicide treatment plan within the broader integrated vegetation management program, Circle next contacted BASF sales specialist Randy Denhart. Circle asked Denhart to help develop an effective herbicide treatment or tank mix that would control the targeted invasive weeds and allow FDC to tailor specific solutions for each of its sites.

"BASF acts as a partner, not just a manufacturer of herbicides," Circle said. "They do everything they can to make our applications succeed, even bringing in other experts."

In this case, the expert was Townsend Chemical. Townsend has managed vegetation programs for companies since 1991 and previously developed tank mixes that were very effective on CRP sites.

The group decided on two options: a tank mix of **Plateau® herbicide** and glyphosate, or **Journey® herbicide**. Either could be applied in the spring to remove invasive weeds like thistles, bahiagrass, Johnsongrass and other species that easily out-compete fresh, native warm-season grass plantings.



In areas that have not been invaded by weeds, FDC's custom equipment tills the soil and drills in native warm-season grass seed.

### Adapting the Tools of the Trade

Choosing the right herbicide is the first step. Knowing that spray equipment, timing and technique are just as important, FDC developed revolutionary tilling, seed and treatment combination technology that allows completion of the multiple steps involved in native warm-season grass installation in just one pass. It requires tractors with multiple fixed booms, custom seed boxes and combination till/drill equipment.

The first boom applies an eight-ounce rate of the Plateau/glyphosate tank mix with a surfactant to preemergent weeds and grasses. Journey also can be used to eliminate the need to tank-mix on site. "Journey gives you the best of both worlds," Denhart said. "The formulation provides both short-term and residual control, and is selective enough in most situations to avoid damaging the plants you want to establish."



At each site, the FDC team assembles and calibrates equipment, and prepares herbicide tank mixes for application.

Spray nozzles and seeders follow a tilling boom, combining preparation, weed control and seeding into one step.





At the same time the herbicide is applied, a mechanically altered seed box drops native warm-season grass seeds into a modified seed boot. The seeds are then pressed with a special wheel that provides uniform row spacing and planting depth. All of these steps are achieved in one pass, rather than multiple passes over years, significantly increasing productivity and reducing labor costs.

### Finishing Strong

In addition to weed management expertise from Purdue, Townsend and BASF, FDC worked with Star Seed to create the best native warm-season grass seed mixes.

"There's no one-size-fits-all approach to the best CRP plantings," said Tom Lutgen, president of Star Seed and an expert in seed growing, containment and sorting practices. "We relish the chance to work with installers like FDC that demand great seed to get great results."

Star Seed shares the FDC drive to constantly improve practices. "There are three key steps in FDC's successful installation process," Lutgen said. "Innovate, cooperate and educate. We make that happen when we work together and build the best program for every site, every time."


Star Seed has also adapted technology to improve native warm-season grass plantings. The company customized cleaning equipment to help sort lightweight, fluffy seeds. Star Seed machinery allows removal of fluff and litter, and sorting of seeds by length, width and weight.

In addition, Star Seed endorses FDC's use of coolers to control seed dormancy, artificially "tricking" the seed into longer viability, which gives FDC more time to find the perfect day to plant.

### Simply the Best

The results of the FDC system are astonishing. In addition to more than doubling the percentage of successful native warm-season grass plantings, it has significantly decreased the waiting time for results.

"It's no longer necessary to wait four or five years to see if your seedlings are going to survive," Circle said. "In some spots, our seedlings emerge in just a couple of weeks. First-year predictable success. That's our real progress."



Just 10 days after treatment, native warm-season grass seedlings emerge.

Circle revisits treated sites in the first few years after treatment to ensure plantings are doing well and weeds have not returned. In some cases, he uses **Overdrive® herbicide** spot treatments to control thistle that is driving out desirable grasses and forbs.

"Stopping reinfestation has to be a top priority if we're going to make the grasses stick for more than one season," Denhart said. "Fred keeps a close watch on his plantings to avoid having them destroyed by reinvasion."

"Once we sat down and redesigned the methodologies and paradigms that shape CRP installations, we were able to make significant improvements," said Circle. "Today we enjoy a 98 to 99 percent success rate in native warm-season grass plantings."

### Sharing Success With Others

Lowe, Denhart, Lutgen and Circle have developed a CRP program unique to the vegetation management industry, and are sharing their process with the federal and state agencies that oversee restoration projects.

More than 30 officials from the Farm Service Agency, National Resources Conservation Service and other federal and state agencies toured restoration projects in May 2007. Many expressed a desire to see more acres without weeds.

"The government only has so many dollars to dedicate to CRP projects," Lowe said. "They are looking for innovative ways to increase return on investment, just like landowners. Our method can help them do that, and they are eager to learn more."

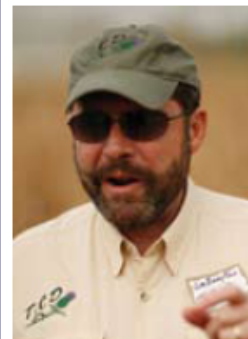
### Recognizing Innovation

As Circle saw his program flourish, he found a new way to communicate his drive for perfection and his unique approach to CRP installations through the **BASF Quality Vegetation Management™ (QVM)** Certification program.

"The QVM Certified Applicator program is the first I've seen that provides a real meat-and-potatoes, difficult-but-achievable, industry-recognized, elevated status for those of us trying to be stewards of the land and make a positive environmental change in the industry," Circle said. QVM gives herbicide applicators a chance to highlight success based on principles and responsible use of herbicides. It redefines and quantifies true success in invasive weed management.

Circle's partners in CRP restoration also have been recognized for their part in developing the program. Lowe received a 2006 QVM **Project Habitat™** Award for his wildlife research, innovation and cooperation with leaders like FDC.

The increased accountability FDC provides has raised the stakes of the CRP program and redefined successful collaboration. "We do it better for the taxpayers who fund CRP; we do it better for landowners, and we do it better for wildlife," Circle said. "We are executing these new standards to achieve the quality results that landowners expect and deserve." 🍷



**Jim Brayton of Townsend Chemical describes the role of herbicides in CRP restoration projects during a field tour sponsored by FDC Enterprises and BASF.**

For more information on FDC Enterprises, winners of 2007 QVM Project Habitat Award, please visit the case study section of [www.vanswers.com](http://www.vanswers.com).