At the Franklin Demonstration Farm, conservation and efficient farming work together.

The Wetland Farmers

Story By Laura M. Browning
Photos By Timothy T. Lindenbaum, The Nature Conservancy

Maria Lemke spends a lot of time traveling through central Illinois' rolling, expansive row crops. The fields stretch for miles, thousands of perfectly straight rows broken only by the occasional farmhouse and winding creek. When Lemke first started working here, she relied on a large map to help her navigate the repetitive landscape. But now the hundreds of acres of farmland and the precise grid of roads marked only by number and direction are as familiar as the paths she hiked as a girl.

Lemke, an aquatic ecologist for The Nature Conservancy in Illinois, guides her truck slowly through a muddy path between crops. She points out one of three wetland units built with federal and state funds through the McLean County Natural Resources Conservation Service and the Soil and Water Conservation District. Each unit comprises three connected wetland sub-units that range from 0.3 to 0.7 acres each. The sub-units look like small, rectangular pools, but act as sponges for the surrounding farmland, holding back and reducing nutrients in agricultural runoff that enters each wetland unit through tubular tiles. Drainage tiles are commonly used throughout the Midwest, forming a vast network beneath the farmlands to drain excess water. At this project site, the network was retiled to measure the exact amount

Golden stalks of corn at the Franklin demonstration farm provide food—and scientific data.

softshell turtle

great blue heron

dickcissel

of farmland that was draining into each wetland unit.

Each of these wetland sub-units drains 3 percent of the surrounding farmland; the combined sub-units drain between 3 and 9 percent. The three pools brim with water, a strange sight amid the emerging corn stalks. Lemke knows that wetlands can benefit water quality of the surrounding streams and rivers, but these rigorous calculations underscore the need for precise results.

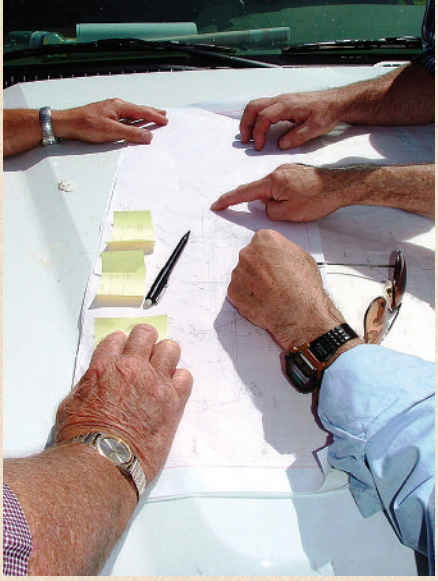
This is some of the richest, most productive farmland in the nation. "It's important," Lemke said, "not to take any more land out of production than what is needed to protect water quality."

The farm Lemke is driving through belongs to the Franklin family, who planted the roots of family and crops six generations ago. The farm itself is 250 acres of neat crop rows, gnarled burr oaks, and thin creeks abutting the interstate and the tightly knit agricultural town of Lexington. Through an agreement with The Nature Conservancy, and with funding from the Department of Natural Resources, the Franklins have allowed the Conservancy to convert some of their farmable acreage into wetlands, and have enrolled those lands in a federal subsidization program—a win-win situation for the Franklins, who are testing conservation-friendly farming techniques without sacrificing crops. Known as the Franklin demonstration farm, it is a show-and-tell site for conservation practices, and enables the Conservancy and partners to collect data on how those practices can produce better results both for farmers and for water quality.

The Mackinaw River watershed contains some of the most fertile agricultural land in the nation. More than 90 percent of it is currently used to grow corn and soybeans.

The shores of the Mackinaw provide habitat for wildlife. Nearly all of the 299 bird species that regularly occur in Illinois can be found within this watershed.

Wetlands are nature's filters: by acting as holding tanks for excess water, they help regulate how much nitrogen, phosphorus and sediment runs off into streams and rivers. Near Lexington, those streams and rivers empty into the Illinois River, and then the Mississippi, before cutting through the continent and into the Gulf of Mexico. Since lands surrounding the Mackinaw River were drained for conversion into farmlands and its tributaries channeled a century ago, it has lost much of its natural ability to filter and regulate the excess sediment that erodes into its waters. Illinois wetlands have been reduced to only 4 percent of their original acreage, too small an area to perform the filtering



(Photo courtesy Mark Godfrey, The Nature Conservancy.)

Maria Lemke and Tim Lindenbaum check the equipment that takes automatic water samples in the wetland sub-units.

processes vital to healthy natural lands.

About 90 percent of land in Illinois is privately owned, and more than three-quarters of the state is farmland. This creates a particularly challenging landscape in which to conserve and protect the natural environment. But it isn't impossible. In 1995, the State of Illinois passed legislation creating the Conservation 2000 fund (C2000). C2000 grants are designed to protect and manage Illinois' natural resources by funding projects through DNR, the Illinois Environmental Protection Agency and the Illinois Department of Agriculture. Perhaps most importantly, C2000 projects are required to incorporate the interests of the local communities and all landowners private, public and corporate. Lemke points to the Conservancy's efforts to hold workshops for local farmers, talking about the balance of wetland conservation and farmland production.

Tim Lindenbaum has been intimately involved with these outreach efforts. A conservationist and farmer, Lindenbaum says that "it's easy to see both sides." He has been farming in central Illinois for 32 years, working the same lands his grandfather began tilling nearly a century ago. Lindenbaum currently farms alternating crops of corn and soybeans on 136 acres at the Franklin demonstration farm, where he also has about 14 acres of prairie grasses—a natural buffer against erosion—in their fourth bloom. Lindenbaum got involved with The Nature Conservancy in 1995 when he attended a Conservancy-sponsored workshop for local farmers about voluntary land management practices along the Mackinaw.

"I was hooked," Lindenbaum said. "From there I found myself a job doing local outreach."

Although he met some resistance and skepticism when he first started talking to farmers about the Conservancy's work along the Mackinaw, he says that a great deal of trust has since developed.

Lindenbaum appreciates the agricultural richness of the Mackinaw watershed, its fertile lands spreading over nearly 750,000 acres. He also recognizes that conservation practices have to make economic sense to farmers, and that is what he is involved with at the demonstration farm. Over time, the 136 conventionally farmed acres will allow the Conservancy to gather hard data that can be used to recommend and help implement farming practices that are good for the long-term health of the environment as well as the farmers whose livelihoods depend on their crops.

At the Franklin demonstration farm, each rectangular pool in each wetland

The Nature Conservancy, Department of Natural Resources and many other partners work to maintain the ecological integrity of the Mackinaw watershed.

The Conservation 2000 program has awarded $274,525 in grant funds to support the Franklin Demonstration Farm project.

unit is carefully monitored with high-tech equipment that records the volume of water moving through each sub-unit and collects water samples at programmed intervals. The wetlands circumvent tile-drained runoff that would have otherwise drained into the Mackinaw River or one of its tributaries. As the water is held back, it reduces flooding and erosion, filters out nutrients from the tile-drained water, and reduces the amount of nutrients and sediments that are deposited in the creeks and rivers. In the long term, Lemke and other scientists believe that using federal programs to implement these wetland practices will create healthier rivers without compromising economic incomes. The data the Conservancy is collecting at the Franklin demonstration farm will help scientists determine exactly how much wetland is needed to protect water quality in the Mackinaw watershed.

The Nature Conservancy has been working along the Mackinaw River since the early 1990s. Because it is difficult to measure conservation work on a scale so large, the Conservancy directed resources into small-scale projects such as the Franklin demonstration farm.

University students view one of the wetland sub-units constructed on the Franklin demonstration farm.

But Lemke likes to return to the bigger picture. Monitoring water samples in central Illinois may seem small. Experimenting with wetlands on 250 acres of farmland may not seem like much. But when these small acts have a trickle-down effect that eventually lead to the Gulf of Mexico, Lemke's work takes on global proportions. The Mississippi River empties into the Gulf of Mexico, where an overabundance of nitrogen causes hypoxia, or dead zones. Hypoxic waters contain too little oxygen, threatening commercial fishing ventures and marine life. Although dead zones like this are found worldwide, the largest known area is in the Gulf of Mexico, at the mouth of the Mississippi River.

Lemke and Lindenbaum's work in the Mackinaw watershed also informs the way organizations like the Department of Natural Resources and The Nature Conservancy interact with communities and farmers within the larger Mackinaw watershed, and, ultimately, along the Mississippi River. Through a Conservancy program known as the Great Rivers Partnership, conservation work in the Mississippi may impact other freshwater conservation projects around the world, in places like the Zambezi River in Africa or the Yangtze River in China.

That Lemke's work can be amplified across the world is what, she says, makes these small projects so meaningful, and so much bigger than a few hundred acres in central Illinois.

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