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Nation's Premier Site for Water Quality Drives Progress

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Nation's Premier Site for Water Quality Drives Progress

Abstract

A farm just outside the north-central Iowa town is home to Iowa State University's Agriculture Drainage Research and Demonstration Site, a facility that has been working to further Iowa State University's water conservation efforts since 1990. The site was born out of the Iowa Groundwater Protection Act, a piece of legislation passed in 1987 that generated funds from fees on pesticide manufacturing registrations, pesticide dealer licensing and a tax on fertilizer sales. A portion of the funds were used to create the 11-acre research site, with Iowa State University partnering with the Iowa Department of Agriculture and Land Stewardship and the Pocahontas County Soil and Water Conservation District.

Keywords

Agricultural and Biosystems Engineering

Disciplines

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Nation's Premier Site for Water Quality Drives ^{ICM News} Progress

January 28, 2016

A farm just outside the north-central Iowa town is home to Iowa State University's Agriculture Drainage Research and Demonstration Site, a facility that has been working to further Iowa State University's water conservation efforts since 1990.

The site was born out of the Iowa Groundwater Protection Act, a piece of legislation passed in 1987 that generated funds from fees on pesticide manufacturing registrations, pesticide dealer licensing and a tax on fertilizer sales. A portion of the funds were used to create the 11-acre research site, with Iowa State University partnering with the Iowa Department of Agriculture and Land Stewardship and the Pocahontas County Soil and Water Conservation District.

"It is probably the premier site around the country in terms of looking at the quality of water from subsurface draining systems and how it is affected by fertility techniques and

the different kinds of cultural practices we have in the field,” said Stewart Melvin, a retired Iowa State University professor in agriculture and biosystems engineering and former chair of the department.

“In the late 1980s, we proposed to create this site where we would evaluate the cultural impacts of crop rotations, fertilizing techniques and, in the first few years, different herbicide applications to see how they would affect the quality of water in the tile lines,” Melvin said.



Currently at the site, 72 individual plots can be found, allowing researchers to monitor the effects of nitrogen management and herbicide management practices on the quality of tile drainage in part of the farm. The findings of over 25 years of continuous study have allowed ISU researchers and Extension and Outreach specialists to make a significant impact on not only local water quality, but the quality of



time to identify how we can reduce nitrate loss from drainage systems and optimize our crop production,” said Matt Helmers, professor of agricultural and biosystems engineering, extension agricultural engineer and the Dean’s Professor in the College of Agriculture and Life Sciences. “We have also been looking at nitrogen management practices and how they impact nitrate loss.”

The site is also a valuable educational resource for farmers, where researchers and extension specialists host field days and presentations throughout the year. The facility in Gilmore City, along with similar studies at 12 Iowa State University Research and Demonstration Farms around the state, helps pass on new science-based information to farmers that can be implemented to help water conservation and management efforts continue.

Results from the Agriculture Drainage Research and Demonstration Site and its scientists have made significant contributions to combat the hypoxia in the Gulf of Mexico – the low-oxygen zone caused by excess nutrients in water from both point and nonpoint sources. A national task force has called on each of the 12 states along the Mississippi River to develop their own nutrient reduction strategies.

Using science-based research results from Gilmore City and many other locations, Iowa State University scientists led the science assessment team that ensured that **research-proven practices were at the heart of the Iowa Nutrient Reduction Strategy** developed by the Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural

Resources and ISU. The strategy was announced in 2013.

"The scientific foundation of the Iowa Nutrient Reduction Strategy truly is one-of-a-kind and first in the nation," said John Lawrence, associate dean for extension and outreach in the College of Agriculture and Life Sciences and director of Agriculture and Natural Resources Extension. Lawrence also serves as director of ISU's Iowa Nutrient Research Center.

"One of the things our strategy did in the beginning was to be based on sound science," Lawrence said. "That's where Iowa State played a key role, to really look at the link between a practice such as cover crops, manure application and nutrient rates and the water. The ISU-led Science Assessment Team looked at a vast body of literature, but the key thing was, it had to be research that fit Iowa's soils and fit Iowa's climates and had to show proof between the practice and water."

With over 25 years of continuous research already in its rearview mirror, the ISU Agriculture Drainage Research and Demonstration Site will continue to lead efforts for clean water and better farming practices in the years to come.

A video was developed by ISU Extension and Outreach to highlight research being done to improve the quality of water in Iowa. [Watch it now!](#)

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