



DOING THEIR PART:

Ohio Grain Farmers are Protecting Ohio's Water

A PROGRESS REPORT



RESPONSIBLE STEWARDS OF OHIO'S LAND



MAUMEE RIVER

Ohio is blessed with beautiful and abundant natural resources, including acres and acres of rich farmland. Throughout the state, farmers work the soil to provide for their families and in the process, feed millions of others around the world. They have great respect for Ohio's land and water and understand the importance of protecting them.

Long before harmful algal blooms formed in western Lake Erie in August 2014 and threatened Toledo's water supply, Ohio's grain farmers were already employing conservation methods and investing in research to reduce the impact of nutrient runoff — primarily nitrogen and phosphorus — on water quality.



LAKE ERIE

Two years after the Toledo water crisis, Lake Erie improvement is clearly visible. But work needs to continue.

Ohio's grain farmers voluntarily stepped forward and initiated a reasonable and responsible approach to this complex issue, which they were not alone in creating. The contributors to runoff and algae blooms are many. Rainfall, industrial pollution, naturally occurring nitrogen and phosphorus in the soil, private septic and municipal sewer systems, and urban storm runoff all play roles in diminishing the quality of the state's water.

Five years after their initial investment in water quality research, and two years after Toledo, actions taken by the state's grain farmers are making valuable and significant progress in protecting Ohio's water.

"Between lower nutrient loads and weather patterns, it has not been a very productive year for algae."

ANDY McCLURE TOLEDO WATER-TREATMENT PLANT ADMINISTRATOR, TOLEDO BLADE, AUGUST 22, 2016

REAL DATA, REAL PROGRESS

Ohio's grain farmers have invested in education and research — more than \$3.5 million — to better understand and mitigate the impact of nutrient runoff on water quality. The core research program is “On-Field Ohio!” led by Dr. Elizabeth Dayton at The Ohio State University (OSU).

Launched in 2012, the OSU program includes edge-of-field surface and tile runoff monitoring of 29 fields in Ohio (14 in the Western Lake Erie Basin). The objective of the research is to relate nutrients leaving farm fields in runoff with on-field conditions and farmer management. The data gathered over the past four years helps farmers by quantifying the performance of best practices to reduce nutrient runoff.

“Ohio farmers are doing a good job of managing soil and phosphorus levels.”

DR. ELIZABETH DAYTON THE OHIO STATE UNIVERSITY

Though research is ongoing, initial findings from On-Field Ohio! demonstrates that voluntary conservation methods are resulting in **real progress**. Unlike recent, well-publicized research studies, which have made sweeping and unsubstantiated assessments about farming's contribution to the algae issue based upon generalizations and questionable projections, OSU's from-the-field research uses scientific methods that result in findings anchored in reality.

The On-the-Ground Data from OSU Proves:

- Agricultural soil phosphorus levels are holding steady or trending down in at least 80% of Ohio counties from 1993 through 2015.
- Soil nutrient testing is vital to determining the right amount and type of fertilizer needed for crops.
- Incorporating fertilizer into the soil through banding or injecting has the potential to reduce the concentration of phosphorus in runoff up to 90%.
- Tile drainage is an effective filtration system that can reduce soil erosion and prevent the loss of nutrients. In general, phosphorus concentration from tile runoff is less than in surface runoff.
- Current guidelines for phosphorus levels in soil established by Tri-State Fertilizer Recommendations appear more than reasonable.

Additional research from the USDA's Natural Resources Conservation Service reaffirms the payoff from farmers' conservation efforts. An assessment by the NRCS of the Western Lake Erie Basin estimated that conservation methods in 2012 reduced:

- Annual sediment losses by 81% or 9.1 million tons per year.
- Annual total nitrogen losses by 36% or 40.6 million pounds per year.
- Annual total phosphorus losses by 75% or 11.4 million pounds per year.



On-Field Ohio! researchers collected more than 2,000 water samples from 29 farm fields.

A REASONABLE AND RESPONSIBLE APPROACH: Educate, Conserve & Certify

Nearly 3/4 of phosphorus in surface runoff is attached to and travels with eroded soil sediment, making erosion control a key to phosphorus runoff control. That's why educating Ohio's grain farmers about effective conservation techniques has played a significant role in the reduction of farm-related nutrient runoff. However, because there is no "one-size-fits-all" solution, the key to conservation is to help farmers identify the most effective methods for soil type, drainage, fertilizer incorporation, erosion control and other best management practices.

A core conservation technique is employing the 4R approach to fertilizer application.



In Ohio, farmers with 50 acres or more are required to be certified in proper fertilizer application techniques. In just two years, 12,600 individuals have been certified.

Additionally, the Ohio Agribusiness Association's (OABA) 4R Nutrient Stewardship Certification Program has certified 34 agronomy facilities, which serve 5,500 farm-based clients with 1.9 million acres in the Western Lake Erie Basin, in fertilizer application best practices.

KEY TAKEAWAYS

Ohio's grain farmers have been proactive in addressing water quality issues in Ohio. The Ohio State University's On-Field Ohio research program, based on more than 42,000 separate analyses of actual water samples from Ohio farms, indicates:

- Agricultural soil phosphorus levels are holding steady or trending downward in at least 80% of Ohio counties from 1993 through 2015.
- Farmers have the potential to achieve up to 90% phosphorus runoff risk reduction through proper fertilizer application methods alone, such as banding and injecting.
- 12,600 farmers have been certified in proper fertilizer application techniques.
- Due to interactions between dissolved and particulate phosphorus as it moves through the watershed, control efforts should focus on removing total phosphorus from farm fields.
- Tile drainage mimics a filtration system reducing soil erosion, preventing the loss of nutrients and reducing concentration of phosphorus in runoff.

UNWAVERING COMMITMENT

Given the complex nature of the algae issue, protecting Ohio's water today and for generations to come will require continued vigilance and collaboration among key stakeholders from government, business and academia.

Ohio's grain farmers are enthusiastic about their proactive contribution to progress and are committed to doing their part to find a long-term solution to this complicated, long-term problem. Ongoing efforts include:

- Continued investment in water quality research.
- Educating grain farmers and others about best practices to mitigate runoff.
- The Ohio Farm Bureau and the USDA's Natural Resources Conservation Service have partnered to create a network of demonstration farms in northwest Ohio to educate farmers, legislators, the media and the public about new and innovative conservation practices.
- Ongoing efforts by the Ohio Federation of Soil and Water Conservation Districts and 4R Tomorrow to educate and promote effective nutrient management practices.

For more information about what Ohio's grain farmers are doing to protect Ohio's water quality, visit ohiowaterquality.org.



GLOSSARY OF TERMS

Soil Testing: Analysis of a soil sample to determine nutrient content, composition and pH level. Testing helps identify correct fertilizer for a crop.

Banding: Sub-surface placement of fertilizer in the same area as the seed. Process provides more nutrients to young plants and reduces runoff.

Injecting: Fertilizer is injected into the ground in either a liquid or gas form. Process allows farmers to be very precise in fertilizer application and to use just the right amount.

Tile Drainage: System that removes excess water from soil below the surface and reduces erosion.

Surface Runoff: Water leaving farm fields because of rain, melted snow or irrigation. Runoff can wash away fertilizer and other substances.

