"Nutrient loading is one of the largest contributing factors in the decline of water quality nationwide. Preliminary data from this study suggests that the saturated buffer has reduced Phosphorus and Nitrogen runoff concentrations by upwards of 50% to 75%, while the retention ponds capture millions of gallons of runoff every year, ultimately acting as irrigation reservoirs which have been tied to significant increases in production yields. Combining innovative practices like the ones implemented at this site can help provide a sustainable and positive path forward as we all work together to improve our natural resources."

– Stephen J. Jacquemin, Ph.D., Wright State University – Lake Campus

- Retention Ponds
- Field Tile Drainage to East Pond
- Field Tile Drainage to West Pond
- Saturated Buffer and Riparian Zone
- Tile Intercept and Reroute
- Pivot Water Line
- Water Control Structures
- Center Pivot Irrigation System

FOR MORE INFORMATION PLEASE CONTACT

VanTilburg Farms Inc.
(419) 586-3077
vantilburgfarms.com

Wright State University - Lake Campus
Agriculture and Water Quality
Education Center
(419) 586-0300
https://lake.wright.edu/

FOUR MILE CREEK AGRICULTURE RUNOFF AND RETENTION PROJECT

"This project is a win-win by greatly improving water quality through soil erosion and nutrient loading reduction while simultaneously creating on field water storage to improve agricultural production as well as creating riparian wildlife habitat."

• The field site is a 136-acre area adjacent to Four Mile Creek in NW Ohio and is situated within the larger Western Basin of Lake Erie.

• The intent of this project is to demonstrate the feasibility of drainage water management in this area of the state. Specifically, the goals for this project were to install and utilize drainage water retention ponds for drainage capture and subsequent irrigation as well as to install a saturated buffer in the riparian area to reduce nutrient concentrations in any water that does runoff.

• The site is systematically drained into 2 on-site retention ponds with a combined capacity of 3.5 million gallons. This provides an opportunity to capture field runoff and also serve as a reservoir for irrigation.

• A saturated buffer (1500') in the riparian zone facilitates nutrient remediation of subsurface drainage by routing a portion of the runoff which exceeds pond capacities through a riparian area characterized by a diverse wildlife seed mixture established in organic soils.

• Water levels and runoff on-site are all managed through a series of water control structures which serve to set pond volumes, control saturated buffer volumes, and maintain soil saturation within the field along crop root zones.

• Other conservation practices on site include cover crops, no-till, nutrient management, vegetative buffers, and an upland field border.

• Riparian areas and ponds also serve as natural habitat, benefitting a variety of wildlife including fish, reptiles, amphibians, birds, mammals, and insects, especially pollinators.

• This project was made possible through funding from Ohio EPA and the Great Lakes Restoration Initiative (GRLI). Project design and implementation was through a partnership between VanTilburg Farms and Pheasants Forever. Water quality monitoring was a collaborative effort between Wright State University – Lake Campus and Mercer County Ag Solutions.

"It is amazing how properly utilizing cover crops, no-till, fertilizer and manure application ties in with emerging practices such as drainage retention and saturated buffers to mitigate loading issues and keep nutrients in the field and in the soil where they belong. In the last two growing seasons, we have seen a 10-15% crop yield increase."

- Luke VanTilburg, VanTilburg Farms

"Water is one of the limiting factors in agriculture production and this is especially true during the summer when crops need it the most. The innovative practice of drainage water management collects field drainage water in the spring, when it is abundant, and stores it for use in a timeframe when it is limited, allowing for an opportunity to increase agriculture production while recycling valuable nutrients."

- Greg McGlinch, M.Sc., CCA, Wright State University – Lake Campus