

2021

Purdue Extension Specialist Quarterly Highlight

July - September (Q3)

Transforming Drainage - Managing Water to Increase Resiliency of Drainage Agricultural Land

Jane Frankenberger, Professor, Agricultural and Biological Engineering, led land-grant university colleagues from Purdue, Iowa State, Michigan State, Minnesota, Missouri, North Carolina State, North Dakota State, Ohio State, and South Dakota State to transform the design and implementation of agricultural drainage to include water storage.

Results showed drainage water storage practices, such as controlled drainage, saturated buffers, and drainage water recycling, significantly reduce nutrient losses from drained land while maintaining or increasing yield across the Midwest. USDA conservation practice standards #447-Irrigation and Drainage Tailwater Recovery and #604-Saturated Buffer support implementation of practices advanced in this project, greatly increasing use by landowners. The team contributed 38 peer-reviewed publications, 167 conference and 49 poster presentations, and 10 popular press articles.

Team members determined economic and environmental benefits and costs of storing drainage water. A database of 39 subsurface drainage research sites was uploaded to the USDA Ag Data Commons and includes 206 site-years of tile drainage, 153 of nitrate-N load, 91 of water table, and 196 of crop yield.

With the drainagedata.org visualization tool, users query data by site and measurements, and then access site maps, summaries, and publications. This major advancement makes data publicly available for scientists within the crop, climate, and hydrology research and modeling communities for future research.

With stakeholder input, the team developed tools (transformingdrainage.org/tools/) to help stakeholders make better decisions about drainage design to protect water quality and improve resilience to future climate change. "Questions and Answers about Drainage Water Recycling for the Midwest" (Extension publication ABE-156-W) was awarded the Educational Aids Blue Ribbon Award by the American Society of Agricultural and Biological Engineers.

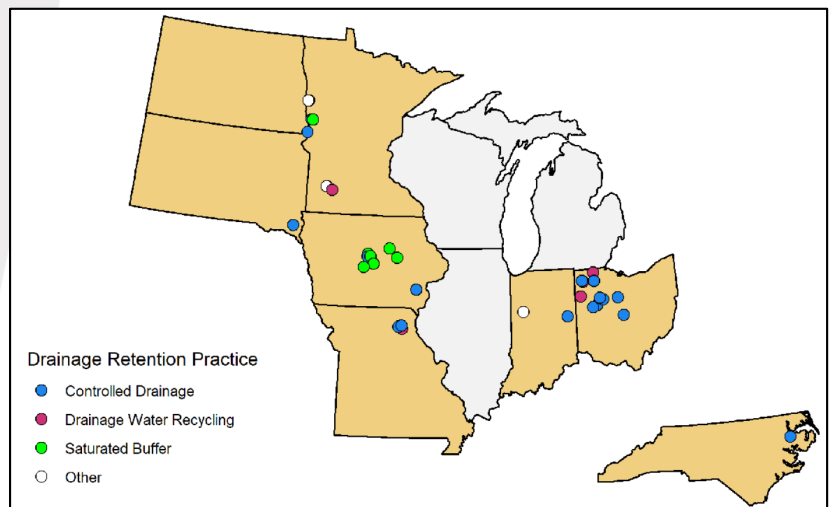


Image: drainagedata.org

Extension's activities (210 presentations, 115 articles, 29 field day reports, 23 webinars, 10 publications, and 9 online decision tools) reached 12,300 agricultural producers, drainage industry representatives, watershed managers, agencies, and policy makers. Members educated next generation engineers and scientists designing drainage systems with water storage. Reach was extended via transformingdrainage.org (121,500 page views, 33,000 users), YouTube views (6,500), and @TD_Drainage Twitter followers (425).

Members continue to cultivate connections and have established the [Conservation Drainage Network](#) for drainage industries, conservation agencies, non-governmental organizations, and researchers to support and sustain ongoing advancements in agricultural drainage and water quality.

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On-Farm Readiness Reviews and Mock Audits Keep Indiana Producers in Business

The recent Food Safety Modernization Act and the Produce Safety Rule by FDA are regulations requiring growers to produce fruits and vegetables without undue risk of contamination.

In preparation for new Indiana Department of Health farm inspections to ensure grower compliance, **Amanda Deering, Clinical Associate Professor, Food Science**, and **Scott Monroe, Food Safety Extension Educator**, arranged for On-Farm Readiness Reviews as developed by the National Association of State Departments of Agriculture.

A three-member team from Extension, the Indiana State Department of Agriculture, and the Indiana State Department of Health inspector who will do the official farm inspection, visits farms for two-hour interviews and tours.

The team observes growing conditions, harvesting practices, packinghouse operations, and water sources. At the end, the team provides suggestions to improve food safety practices and educational resources to assist with solutions for achieving compliance. Since the new regulations and instructions, a total of 39 reviews have been conducted.

For producers moving into wholesale or increasing sales, Mock Audits are conducted to help growers prepare for third-party audits, a buyer-driven industry requirement. Helping growers pass these audits assists them in gaining access to new or additional markets. Eight Mock Audits have been completed.



During the pandemic, Reviews and Mock Audits did not resume until July. Precautions were taken with team members wearing face coverings, maintaining a distance of six feet, and meetings and discussions being held outside where adequate space for separation existed.

Since produce farm inspections began in 2019, all farms that had completed the Review passed inspection and were found to be in compliance with regulations. All producers who had Mock Audits passed their official industry-required audit and moved ahead with expansion of their operations.

These On-Farm Readiness Reviews and Mock Audits have helped Indiana operations meet regulations and requirements for safe produce production.