

## **How science is informing the future of agriculture in Michigan**

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Agroecosystem nitrogen losses are challenging to mitigate for a variety of reasons ranging from environmental uncertainty to agronomic management decisions, among others. While some studies indicate continued losses of nitrogen despite decades of investment in conservation practices, others have found reductions in watershed-scale mass balances reflected in improved water quality. Providing sound management recommendations given the complexity of nitrogen transformations throughout an ecosystem from soils to coasts requires translating science into practical policies and programs. State agencies are especially in need of actionable outcomes to help define the next step to adaptively managing agroecosystems. In Michigan, the newly formed Office of Agricultural Science and Research at the Michigan Department of Agriculture and Rural Development (MDARD) aims to fill this need across a variety of topic areas, including watershed nutrient losses and agricultural greenhouse gas emissions. Ultimately, the goal is to improve environmental outcomes while sustaining agricultural resiliency through the implementation of strategies based on a defensible scientific foundation that can adjust with the influx of new information.