

Julie M. Harrold,
Research Needs
Committee Co-
Chair, Indiana State
Department of
Agriculture

Marcia Willhite,
Research Needs
Committee Co-
Chair, Wisconsin
Department of
Natural Resources

August 17, 2020

Hypoxia Task Force Members:

As an outcome of the February 2020 Hypoxia Task Force (HTF) meeting in Washington, DC, seven workgroups were stood up focused on advancing various conservation outcomes in the Mississippi River Basin. One of those was the Research Needs Committee which is composed of state agency representatives, federal agency representatives, and land-grant university representatives of SERA-46. The mission of the Research Needs Committee is to identify key research areas that effectively support state implementation of nutrient reduction strategies.

The Committee assembled research gaps from several HTF-related sources: the letter sent by the HTF states to the Water Subcabinet in May of 2019; a brainstorming session at the February 2020 HTF Coordinating Committee meeting; and the 2013 Reassessment of the 2008 Action Plan. From there, the committee conducted a survey amongst HTF member states to gauge what types of research would be helpful in assisting implementation efforts. States were asked to prioritize potential areas of research.

The attached document contains the results from this survey, with the states' top seven research topics identified and ranked. Other research topics identified as long-term needs are also included. We respectfully submit this information for your awareness and would be happy to brief the HTF Co-Chairs or the full Task Force on these priorities.

Our next step is to share the seven research priority topics with SERA-46, ARS and other research arms of federal HTF member agencies so that state priorities can be communicated to the research community. In the upcoming months, the Research Needs Committee will arrange a literature review of the highest priority topics in order to identify what research may already exist or is in progress, and to determine where more research is needed to share with all HTF and Coordinating Committee members.

Sincerely,
Research Needs Committee
Hypoxia Task Force

Hypoxia Task Force Research Needs Workgroup

Research Needs – Top Priorities



Research Topics Identified and Ranked as Top Priorities:

- Support research on the performance and effectiveness of individual and/or suites of conservation practices to inform implementation.
- Continue to develop easy-to-use, field-scale conservation assessment tools that incorporate estimates of nutrient reduction benefits.
- Enhance estimates of levels of conservation intensity required to see a quantifiable change in water quality
- Edge-of-field to stream nutrient transport and relationship to overall water quality trends (at local and region scales).
- Impact of legacy nutrients (internal loading) on water quality
- Improve understanding of underlying processes causing a lag between BMP implementation and change in water quality in streams; incorporate lag response into regional and basin-scale models.
- Development of a fertilizer efficiency metric that quantifies nutrient reduction to the environment in terms of water quality related to the 4Rs.

Other Research Topics Identified as Long-Term Needs:

- Variables that increase BMP adoption (e.g. economics, community, social acceptance).
- Technologies to reduce nitrogen from wastewater treatment, including feasibility analysis.
- What are the synergies and trade-offs of balancing P and N reduction: trade-offs in managing for both phosphorus and nitrogen in terms of effectiveness and performance.
- Mitigating the effect of more intense storm events on BMP performance (example: structural BMP performance – do practice standards need to be revised to account for larger storms).
- Further development of scientific support for nitrate water quality criteria that can be used by states to assess waters and develop water quality standards to protect aquatic life from nitrate toxicity.
- Enhance our understanding of how weather patterns and changes in climate may affect nutrient reduction tracking and goals.
- Air deposition as a nutrient source: e.g., air emissions of nitrogen gases, wind erosion of phosphorus and redeposition in lakes.