

Minnesota River Congress Theory of Change

Developed from meeting 7-19-17 With Linda Meschke, Ted Suss and Scott Sparlin

To Increase Soil Organic Matter in the Minnesota River Basin

The Minnesota River Congress's [MRC] Theory of Change [TOC] is that farmers and land managers can be empowered to adopt methods to manage their soils in a way that maintains or improves farm economies and provides priority ecosystem services to create a sustainable model for basin scale agricultural production.

This initiative is an outcome of the resolution passed by the MRC on November 19, 2016 and reads as follows:

Resolution in Support of Increasing Soil Organic Matter in the Minnesota River Basin

WHEREAS, the Minnesota River and several of its tributaries are impaired waters in Minnesota; and

WHEREAS, nonpoint source pollution is a major component of the rivers degradation; and

WHEREAS, approximately 8.46 million acres or 78% of the basin is in annual row crop agriculture¹; and

WHEREAS, managing soil quality to increase soil organic matter increases agricultural productivity²; and

WHEREAS, for each 1% increase in soil organic matter, water-holding capacity increases to store an estimated additional 20,000 gallons of water per acre³; and

WHEREAS, every 1% increase in soil organic matter adds approximately 20,000 pounds of carbon per acre⁴ increasing carbon sequestration and climate change mitigation; and

WHEREAS, increasing soil organic matter increases nutrient cycling resulting in less nutrient leaching, improved soil structure aggregation and increased erosion prevention⁵.

THEREFORE, BE IT RESOLVED that the Minnesota River Congress support the development of an initiative to increase soil organic matter in the top six to eight inches of soil by 1% over the next ten years in 50 percent of the annual cropped fields across the basin.

BE IT FURTHER RESOLVED THAT as a first step toward this initiative, that \$150,000 be awarded annually from the Clean Water Fund, for the next ten years, to the MN Extension for the purpose of acquiring a staff person, and their supporting needs, who can develop and deliver education, research and training to agronomists, farmers and others on methods focused on increasing soil organic matter to reduce water quality impacts from row crop agriculture and increase crop productivity.

¹ <http://mrdbc.mnsu.edu/mnbasin/trends> p. 10

² <http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/health/mgmt/?cid=stelprdb1237584>

³ <https://www.nrem.iastate.edu/landscape/content/where-do-you-hide-20000-gallons-water>

⁴ <http://www.noble.org/Ag/Soils/OrganicMatter/>

⁵ <http://www.noble.org/Ag/Soils/OrganicMatter/>

In order to achieve this goal we will develop the following objectives for the MN River Basin:

1. Develop a **diverse network of partners** who can research, demonstrate and teach methods for farmers to adopt enhanced soil health management systems
2. Develop and identify a U of M Extension **person to lead and coordinate outreach** on effective soil health management practices
3. Share input and advice on how to **reduce redundancies and ensure greater efficiency and impact** from individuals, commodity groups, business and government within the basin
4. Identify and focus on **key strategies** that will get us to the goal, such as use of
 - a. Cover Crops
 - b. Less Tillage Passes
 - c. Diversify the Crop Rotation
 - d. Increase Water Holding Capacity
 - e. Incorporate Grazing
5. **Leverage collaboration** with organizations who have common goals
6. Development of a **cohesive outreach strategy** that can lead to expansion of learning through diverse methods that builds the knowledge base of farm land managers resulting in adoption of best practices for soil health management
7. Develop and adopt a set of **metrics** to measure and track results

Budget:

\$250,000 per year for staff [Extension- \$150,000; Technical Coordinators - \$100,000] Clean Water Fund

\$1,000,000 per year for implementation, soil testing and tracking [Clean Water Fund monies]

\$1,000,000 per year leveraged from USDA

\$1,000,000 per year leveraged from Foundations