

Effect of manure and perennials on soil health indicators in the Red River Valley

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Soil health is a relatively new concept in agricultural research which incorporates new and old soil metrics. Monitoring and improving soil health will help combat climate change, build resilience in the agricultural industry, and ensure food security. There are different ways of measuring soil health however, the main premise is the use of multiple soil health indicators to evaluate soil. With ever growing attention from farmers and industry comes a need to understand soil health on the prairies. The research I have been conducting over the past few years focuses on assessing the impacts of historical management on soil health using indicators from Cornell Soil Health Test. The NCLE long-term nutrient management field laboratory is the study that was used to evaluate the impact of management practices on soil health. The NCLE site has multiple contrasting treatments and a well documented history of those treatments making it a great site to research soil health. Samples from 2020 showed that solid dairy manure application at the nitrogen rate can improve the status of the following soil health indicators: Active Carbon, Soil Protein, Potentially Mineralizable Nitrogen and Total Organic Carbon. In addition, perennial crop history improved Aggregate Stability, Potentially Mineralizable Nitrogen and Soil Respiration. Soil building practices such as no-till and cover cropping have shown no effect on soil health indicators after two years of treatment. Yield results will also be included to give context to the soil health indicator results.

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