

Carbon Farming in the Northern Great Plains: Recent Research Findings

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Most agricultural soils in the northern Plains have the capacity to store more carbon. Increasing soil carbon can provide climate regulation benefits, and in doing so, may offer supplemental income for farmers and ranchers through ecosystem service markets. However, there is considerable uncertainty regarding the efficacy of agricultural management practices to achieve lasting climate regulation benefits, particularly in the northern Plains. This presentation will review research findings from the USDA-ARS Northern Great Plains Research Laboratory, where soil inventory and micrometeorological methods have been used to document management effects on soil carbon and greenhouse gas emissions in rainfed cropping, integrated, and pasture-based production systems. Broadly, findings suggest achieving climate regulation benefits is difficult under conventional management. Agronomic practices that preserve carbon already stored in soil while extending periods of photosynthesis are effective responses to climate change, both in mitigating its causes and adapting to its impacts.