

Natural Systems



Understanding Soil Carbon in Saskatchewan's Pasture and Forage Landscape



Saskatchewan is supporting applied research to improve understanding of how pasture and forage lands store carbon in the soil and maintain long-term productivity. The project focuses on both native and managed grasslands and examines how land management practices influence soil health over time.

The research measures soil carbon and soil properties across pasture and forage landscapes to produce detailed maps showing where carbon is stored. This work helps establish a reliable baseline for soil carbon levels and improve understanding of how grazing practices, forage management and landscape conditions affect soil quality.

Expected outcomes include a soil spectral library, analytical tools for low-cost carbon analysis, identification of best management practices for enhancing soil carbon and whole-farm modelling to support informed decision-making. Mapping carbon stocks at a fine spatial scale, including quarter-section level analysis, provides practical information to guide sustainable land use practices. Research findings will also be integrated into digital tools such as the [Holos Model](#) and the Saskatchewan Soil Information System to support land management planning.

The five-year project is led by researchers from the University of Saskatchewan and the University of Alberta, in collaboration with Agriculture and AgriFood Canada, Ducks Unlimited and other partners. The project is supported by \$3.15 million in provincial and federal funding through the Strategic Research Initiative (2022 to 2027) and nearly \$87,000 from the Saskatchewan Cattle Association.

Why It Matters

Healthy soils are essential for productive pastures and reliable forage systems. This research helps identify land management practices that support strong soil structure, stable productivity and long-term land stewardship. By improving access to soil data, mapping tools and practical decision support systems, the project strengthens the beef and forage sector and supports sustainable agriculture across Saskatchewan. The work also positions the province as a leader in soil science and land management innovation.

Links to Related Information

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