

AGRICULTURE AND ENVIRONMENT

ENVIRONMENTAL INNOVATION

LAND MANAGEMENT SOLUTIONS

FUNDING DETAILS

Advancing native habitat recovery and improving carbon sequestration through harnessing soil microbial resources in Alberta's Prairie landscape.

Grasslands, invaluable for ecological, agricultural, and socio-cultural reasons, are threatened by invasive species and climate change. As Alberta shifts towards low carbon energy, restoring coal-mining sites in grasslands is imperative. Current restoration efforts usually focus on planting native Prairie grasses, forbs, and shrubs, controlling invasives, and monitoring sites. However, this approach can be costly when plant establishment is low, thus requiring new techniques to ensure better plant establishment and long-term restoration success. This project aims to utilize soil microbial interactions with native plants to shape aboveground ecosystem dynamics, augmenting conventional methods with ecologically informed strategies for sustainable land management.



LETHBRIDGE POLYTECHNIC



RECIPIENT:

Lethbridge Polytechnic

Adriana Morrell



PARTNERS:

Alberta Innovates,
Lethbridge College,
Athabasca University,
University of Calgary,
Nature Conservancy of
Canada



TOTAL BUDGET:

\$552,594



AI FUNDING:

\$249,995



PROJECT DATES:

JUN 2024 –
MAY 2028



PROJECT TRL:

Start: 7
End: 9

APPLICATION

Project will employ microbial amendments to leverage soil biological resources, enhancing the recovery of native plants in post-disturbance scenarios like coal-mining. Additionally, it expands the purview to analyze their effect on carbon sequestration in Alberta's grasslands.



ALBERTA INNOVATES

AGRICULTURE AND ENVIRONMENT

ENVIRONMENTAL INNOVATION

LAND MANAGEMENT SOLUTIONS

PROJECT GOALS

Main Objectives:

Microbially leveraged nature-based solution for restoring coal mining-affected grasslands by:

- Testing the effectiveness of AMF amendments for efficient grassland restoration and
- Measuring the influence of amendments on restoration through multi-dimensional soil assessment metrics.

BENEFITS TO ALBERTA

Project directly benefits reclamation efforts by the Nature Conservancy of Canada and others to reclaim land in southern Alberta disturbed by coal mining. More broadly, research outcomes will contribute to knowledge and methods of practice for restoring ecosystem function in grasslands and other areas. It also contributes to a growing body of knowledge related to optimizing land management practices with the goal of maximizing carbon sequestration.

CURRENT STATUS

OCT 2025 - IN PROGRESS

Pre-restoration soil assessments and site selections have been completed, including soil analysis for nutrients, contaminants, and carbon. Native arbuscular mycorrhizal fungi (AMF) have been extracted and analyzed. Locally-sourced seeds of grazing-suitable native prairie grasses have been procured. Grazing-suitable native grasses with soil microbial amendments ready for planting at the restoration sites is underway.