

Agriculture and Permafrost

Effects of changing permafrost conditions on agriculture and agriculture capability classification in Yukon

CONTEXT

Permafrost is susceptible to climate change's warming trends. Agricultural development, infrastructure and production is impacted by changing permafrost conditions such as excessive wetness, hummocky topography and ground subsidence.

Past and present Yukon farmers have adapted conventional agriculture methods to accommodate for northern specific permafrost conditions. The warming effects of climate change are expected to increase the rate of permafrost decay.

Photo Credit: K.Davies



OBJECTIVE

This project aims to identify challenges and barriers to agriculture caused by changing permafrost conditions. Adaptations to conventional agriculture methods will be documented and best management practices summarized.

The project also aims to identify key permafrost indicators and timelines to use in conjunction with the Land Suitability for Agriculture Rating System.

APPROACH

Researchers will use GIS modeling to identify areas of past and current agriculture development prone to changing permafrost conditions. GIS analysis will help predict which regions and soil types will be most affected. Lastly, GIS models will examine future scenarios involving effects of changing permafrost conditions and agriculture capability.

Researchers will also conduct field visits to compare GIS data with land-based observation and results.

Interviews with farmers and owners of adjoining lands will be conducted to gather information, timelines and best management practices within the agriculture community.

This four-year project will focus on four distinct agricultural regions: Whitehorse/Southern Lakes, Haines Junction, Dawson and Central Yukon.

EXPECTED RESULTS

- Document successes and challenges of agriculture production in areas of changing permafrost conditions;
- Summarize existing best management practices for agriculture in areas of changing permafrost conditions;
- Determine key permafrost criteria to use with the Land Suitability for Agriculture Rating System.

Significance

Knowledge gathered from this project will assist current and future Yukon farmers as they adapt their agriculture operations to changing permafrost conditions.

Partners

- Agriculture Branch, Energy, Mines and Resources, Government of Yukon
- Cryogeographic Consulting
- Agriculture and Agri-Food Canada
- Yukon Geological Survey, Energy Mines and Resources, Government of Yukon
- Aboriginal Affairs and Northern Development Canada

FOR MORE INFO

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