**Tool to Determine Areas of Potential Opportunity for Carbon Sequestration on Agricultural Lands in Canada**

This tool provides an overall summary of areas of potential opportunity for soil carbon sequestration on the Canadian agricultural extent. This extent was defined using Statistics Canada’s Agricultural Ecumene geographic boundary.

It provides spatial information across Canada showing areas of higher potential opportunity to sequester carbon on agricultural lands. Lower potential areas do not suggest that there are no carbon sequestration opportunities; however, these areas are considered of lesser priority.

To aid in the interpretation of the map, please refer to the legend. Areas in red have the highest potential opportunity for carbon sequestration whereas areas in blue have the lowest potential opportunity for carbon sequestration. This analysis was performed by AAFC’s AgroClimate, Geomatics, and Earth Observation Division with best readily available datasets.

This tool could be used in developing a project proposal for the Agricultural Climate Solutions program as part of the justification for a proposed Living Lab collaboration hub location or landscape.

**Methodology:**

As described in the Program website ([agr.gc.ca/agriculturalclimatesolutions](https://www.agr.gc.ca/eng/agriculture-and-the-environment/agricultural-climate-solutions/?id=1615985409730)), the main focus of Agricultural Climate Solutions will be on greenhouse gas (GHG) mitigation, primarily through soil carbon sequestration. Therefore, the most suitable regions to implement a Living Lab project are areas with high potential for soil carbon sequestration. These regions should then be further analyzed by the lead applicants for its high potential for adoption of agriculture beneficial management practices that can contribute to or hinder soil carbon sequestration.

The rating score for this map was based on two environmental components: carbon sequestration capability and agricultural practices. The weighting of these factors was determined on a national basis and all regions within the Canadian agricultural extent have been rated using the same criteria. Only data sets which cover all agricultural lands within a particular province are used in this analysis, and thus all projects will be rated equitably.

The following datasets were incorporated in the weighting model:

Under the Soil Carbon Sequestration heading:

* AAFC 2016 Agri-Environmental Relative Soil Organic Carbon Indicator
* AAFC 2016 Agri-Environmental Soil Organic Carbon Change Indicator
* AAFC 2016 Agri-Environmental Soil Organic Carbon Degradation Risk Indicator
* NRCAN Landcover (cropland)
* Canada Land Inventory (Class 1 through 3)
* AAFC Gridded Soils (90m) depths 0-15 cm
* Soil Landscapes of Canada: Soil Texture

Under the Agricultural Practices heading:

* 2016 Agriculture Census by Census Consolidated Subdivisions (CCS)
* No-Till acres
* Summer fallow acres
* Land in Crops acres

Data Limitations/Caveats:

* Data is limited to data that is readily available
* Data scales are 1:1M and are national availability
* Census data is from 2016
* Analysis covers agricultural land areas only (based on Statistics Canada’s Agriculture Ecumene geographic boundary). Although, the Territories are not included within this geographic boundary, sites can be identified within the territories that will contribute towards the activities of a living lab of a province. Applicants will be required to justify the site selection by demonstrating the potential on carbon sequestration using complementary datasets.

For a more detailed analysis, applicants are invited to browse data available on the Government of Canada Open Data portal (https://open.canada.ca/en/open-data).