

Soil capability for agriculture

The agricultural land capability rating system developed by the Canada Land Inventory (CLI) comprises seven classes indicating the extent or intensity of limiting factors for mineral soils. The classes are subdivided by type of limitation. Marshall et al. (1979) modified this system for the St. Lawrence lowlands with a view to describing the extent of limiting factors more accurately. The class is determined from the sum and extent of limiting factors (Nolin and Lamontagne 1990).

The fundamental assumptions underlying this classification system are as follows:

- Assignment of a soil to a particular class is an exercise in interpretation based on the combined impact of the distinctive features of climate, terrain and soils, limiting factors for agriculture, and the general capability of the soils to produce field crops;
- Soils in any given class are similar in terms of the extent of the limiting factors but not the types of limiting factors;
- Soils for which necessary improvements (such as drainage and irrigation) are deemed feasible and economically advantageous are classified on the basis of limiting factors or the risks associated with their utilization after the improvements have been made;
- Modern machinery is used for tillage and harvesting;
- Factors unrelated to soils (e.g. distance from markets, quality of roads, cropping system, farmer's resources) are not taken into account.

Class 1 to Class 4 soils are suitable for continuous field crop production. Class 5 and Class 6 soils are suitable for the production of perennial forage crops, owing to their very serious limiting factors. Class 7 soils are unusable either for field crops or for perennial forage crops. Classes designated O contain organic soils (Nolin and Lamontagne 1990).

Soil capability for agriculture maps were widely used in identifying agricultural and non-agricultural zones for farmland protection purposes in Quebec and in the development plans of regional county municipalities (RCMs). We may recall here that this classification system applies only to field crops and does not consider the production of specialized crops such as trees, tree fruits, ornamental plants and small fruits, or other non-agricultural uses (e.g. wildlife reserves or recreational areas). However, there are classification systems that can be used to rate various types of land capability.

There are no Class 1 soils in the study area. Class 2 soils account for 45.3% of the total area. Drainage is the main limiting factor. However, since drainage has been improved in the case of most cultivated land, these soils are characterized by excellent capability for agriculture, thanks to the moderate climate and the presence of fertile clay soils. Class 3 soils account for 47.4% of the total area. Drainage, fertility and permeability are limiting factors on the capability of these soils for agriculture. Fertility and aridity are the main limiting factors in the case of Class 4 (5.2%) and Class 5 (0.3%) soils. Class 6 (0.1%) and Class 7 (0.3%) soils are limited by their steep slopes and rockiness. Lastly, Class O4 organic soils account for 1.2% of the total area, and Class O5 soils for 0.2%.