

### Field Services



### Nova Scotia Soil Quick Facts

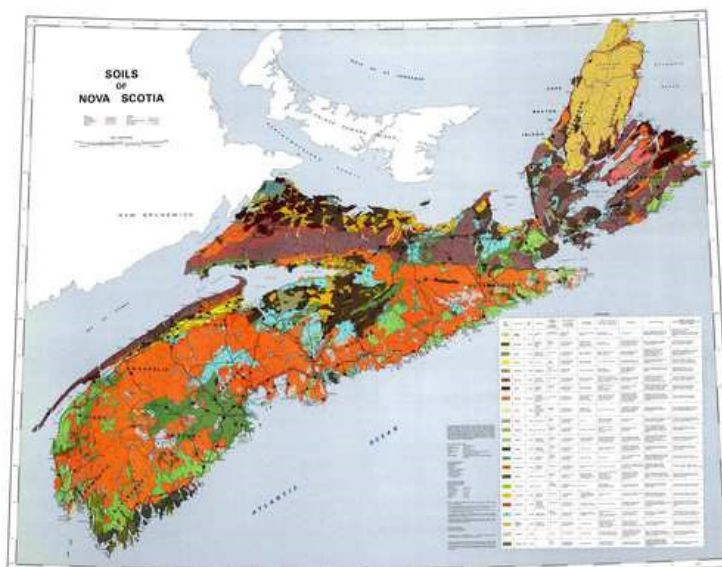
Soils are a complex integration of mineral material, organic matter, water, air and living organisms.

Soils differ from region to region and can even be different from field to field or within a field.

Most of Nova Scotia's soils are naturally acidic, low in organic matter and are relatively infertile but with good management, improvements can be made and some soils can become very productive.

### Where is the Agricultural Soil in Nova Scotia?

Not all soil is suitable for agriculture in Nova Scotia. Soils in Nova Scotia have been classified according to the Canada Land Inventory classification system into 7 different soil capability classes with Class 1 being the best and Class 7 being the worst. Nova Scotia doesn't have any Class 1 soils. Soils qualifying for Class 2-4 are considered suitable for cultivated field crops, Classes 5-6 are considered suitable for perennial crops and Class 7 is considered unsuitable for agriculture. Soil maps have been developed for Nova Scotia to delineate the different soil types. According to the map at right, the orange coloring running up the center of the province is a Gibraltar soil which is a class 7 soil and considered unsuitable for agriculture.



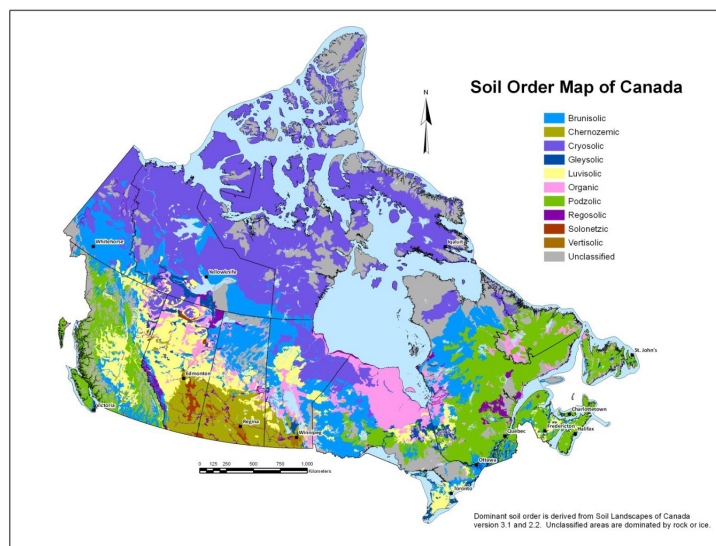
Source: Dougall, J.I. and J.L. Nowland. 1972. *Soils of Nova Scotia Map*. Report No: nss. Cartography Section, Soils Research Institute Research Branch, Canada Department of Agriculture, Ottawa. Available at: <http://sis.agr.gc.ca/cansis/publications/surveys/ns/nss/index.html>

### How Much Soil do we Have?

The estimated amount of land currently in crops and pasture is 138,000 ha. It is estimated that there is another 1.6 million ha not currently in crops and pastures which is potentially suitable for agriculture. However, some of the land that is considered potentially suitable

for agricultural has been developed for other purposes and cannot be converted back to agriculture so therefore there is approximately 1.1 million ha of land that is potentially suitable for agriculture. This represents 21% of Nova Scotia's total land area.

Soil is used for agriculture across all of Nova Scotia; however, Colchester county has the most farm area (including crop and pasture land, summer fallow, natural land for pasture, woodlands, wetlands, and Christmas tree area) while Richmond county has the least.



Map of Canada showing the different soil orders according to the Canadian system of soil classification. Nova Scotia predominantly has podzolic soils. Available at: <http://www.soilsofcanada.ca/>

## How is Soil Produced?

It might seem funny to think of soil being produced but all soil in Nova Scotia didn't start out as soil. Soil starts out as what's called parent material which is really rock and sediments. Over time climate conditions (physical and chemical processes) begin to change the parent material. As this material changes, large and microscopic forms of life begin to inhabit the soil and further develop it into the soil we have today. Even where the soil is located will influence how it is produced. For example, the soil on top of a hill will be very different than the soil located at the bottom of the hill. Soils will often form in layers which are called horizons. The horizon closest to the surface is usually the most developed and is the A horizon. The A horizon is then followed by a B and or C horizon. The C horizon is the least developed and most closely resembles the parent material.

Most soils in Nova Scotia are podzolic soils according to the Canadian system of soil classification. These soils are distinguished by high acidity in the A horizon which results in formation of a bleached layer (the Ae horizon) and deposition of iron and aluminum in the B horizon as shown in the photo below. Many agricultural soils have been tilled so these layers are not distinct but the processes that caused these layers to form largely have remained the same so with human intervention these soils would be classified as they were originally.

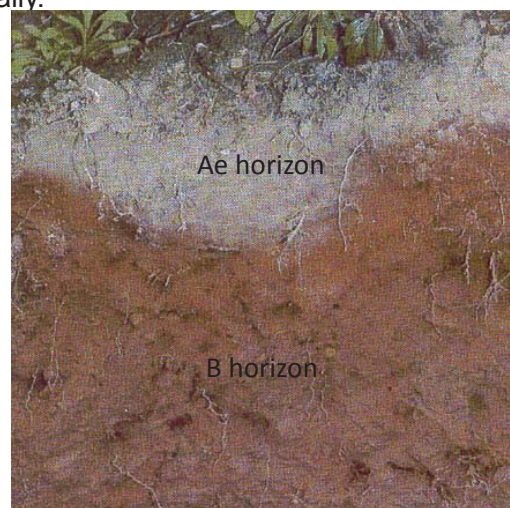


Figure 21 Orthic Humo-Ferric Podzol, Nova Scotia.

Source: *The Canadian System of Soil Classification*, 3rd ed. Agriculture and Agri-Food Canada Publication 1646, 187 pp. Available at: <http://sis.agr.gc.ca/cansis/taxa/cssc3/fig21.jpg>

## How is Soil Used?

In agriculture, soil is used to grow plants. These plants can be plants which are consumed by people or by animals. Soil must be prepared before planting. There are many ways to prepare soil and many different soil amendments that can be used to improve it. One of the most common amendments used in Nova Scotia is limestone. Lime is necessary to adjust the pH of our naturally acidic soils. Most agricultural crops prefer a soil pH that is approaching neutral (6.5). In addition, fertility adjustments are made depending on the crop requirements and the fertility level in the soil. Crop fertility requirements have been established through many years of research and soil fertility levels are determined by soil testing. There are many ways to add fertility to the soil and some of the more common include: the addition of manure, incorporation of nitrogen fixing plants, composts, and addition of synthetic and organic commercial fertilizers. The physical state of soil also can



be improved through some tillage practices as well as addition of organic matter. It is important not to over work the soil by too much tillage or by driving in the field when the soil is too wet. This can cause compaction which will impair plant growth.



*Soil probe used to collect soil samples.*



*Earthworms play a major role in soil fertility as well as improving the soil through a multitude of channels which results in better aeration and drainage.*

## What Happens to the Soil After a Crop is Grown?

Some crops are perennial so at the end of the season after the last harvest, there is still a living plant covering the soil. This plant cover helps to protect the soil by helping to hold it together so it is less likely to be lost from erosion. Perennial plants also continue to take up nutrients so nutrients are less likely to be lost to the environment than if the soil was left bare. In annual cropping systems unless a cover crop is planted the soils is sometime left uncovered. Because we have a short growing season leaving the soil bare is sometimes necessary but it is not ideal as it leaves the soil exposed and puts it at risk to be eroded. Crop residues, the portion of the plant that is not harvested but left on the field, can also help cover and protect the

soils and many farmers leave crop residues in the field for that reason. Soils remain very active after the crop has been harvested. Communities of microorganisms will continue to live in the soil and some of these microorganisms will help to break down some of the crop residues that are left in the field. Although the winter and cold temperatures slow the activity of these communities down, there is evidence that the toughest of microorganisms will still be working at their jobs even during the winter.

## What Challenges do Farmers Face With Their Soils?

Farmers are faced with many challenges with soils in Nova Scotia. These can include adverse climate, poor structure and or permeability, erosion, low fertility, overflow, moisture deficiencies attributed to soil characteristics, salinity, stoniness, shallowness to bedrock, adverse soil characteristics, adverse topography, slope or pattern or excess water just to name a few. Farmers have adopted management techniques to address these challenges but they often find themselves at the mercy of mother nature, which is really difficult to try to manage.

## More Information on Soil

Agriculture and Agri-Food Canada  
[Soil Survey reports for Nova Scotia](#)

[Virtual Soil Science Learning Resources](#)

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