

# Factors to Consider for New Vineyard Plantations

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The wine industry in Nova Scotia has been growing quickly the last 15 years with meteorological conditions more favourable for hybrids and *Vitis vinifera* (European grape varieties) in certain areas of Nova Scotia. The goal of this document is to provide information about the factors which should be taken into account when starting a new vineyard plantation.

Before starting, the first recommendation is to do some thorough research; find possible locations and think about which grape varieties can be produced well in those locations. It is also a good idea to contact wineries that you would like to work with and to discuss with them which varieties they might be expecting to purchase.

## SITE SELECTION

Nova Scotia is at the limit of climatic conditions for growing grapes for wine production. It is very important to pay attention to the details of site location for future vineyards since a vineyard is big investment that is expected to be in production for 20 to 25 years. A poor decision now will have a long-lasting effect.

## CLIMATE

When researching the location, the first factor to consider is climatic conditions. The growing season has to be long enough to allow the fruit to ripen and the plants to acclimate.

### MINIMUM TEMPERATURE

This differs for hybrids and *V. vinifera*. However, for European varieties  $-21^{\circ}\text{C}$  is considered to be the minimum, while hybrids can withstand lower temperatures. It will also depend on the length of exposure to these low temperatures, but less than  $-26^{\circ}\text{C}$  is not tolerable more than once every 10 years.

### FROST FREE DAYS (FFD)

This is the period without frost between the last episode of low temperature in spring and the first one in fall. A minimum of 150 FFD is necessary. A frost at the beginning of budburst may kill the blossoms, leading to loss of production for the current year; new buds will form during the summer for the next season's production. On the other hand, if a frost comes at the beginning of autumn, harvest will be necessary, as the fruit will not continue to ripen.

### GROWING DEGREE DAYS (GDD)

This is the sum of time with temperatures above  $10^{\circ}\text{C}$ . A minimum of 900 GDD are necessary for wine grape production. If the location presents lower values, it is not recommended for the establishment of a vineyard. With lower values, it will be difficult to reach the desired level of sugar (Brix or Soluble Solids), total acidity, pH, seed ripeness, aromas, etc., to produce diverse types of wines.

### WIND

A breeze or moderate wind can help to avoid spring frost and favours drying dew, so it improves sanitary conditions in the canopy. It is good to have enough wind to move the canopy of the vines, without breaking branches and canes or causing damage to the clusters.

### DISTANCE TO A LARGE BODY OF WATER

Bodies of water can ameliorate temperatures via their warming effect on the air, depending on the size of the body of water. Sloping topography is also an affecting factor. Depending on the altitude and the shape of the hills, the air flow can move longer distances over the land influencing a larger area.



## SOIL

### PH

Nova Scotian soils are quite acidic in general, therefore, it is normal to find pH's of 5 to 5.5 or even lower. For grape vines, a good value to start is close to 6. Each variety will have different needs, but it is recommended to have values between 6 and 7 when you are ready to plant vines. (If your pH is low, you may be interested in [Which Limestone Should you Use?](#))

### TEXTURE

Soils are mainly composed of three types of particles: clay, silt and sand. The combination of these three particles in different proportions gives different characteristics to the soil; water holding capacity, good drainage, reasonable root depth and moderate fertility. Additionally, the texture of the soil has an impact on ability to work on the soil; consider whether you will be able to drive a tractor through the vineyard early in the spring and many times throughout the season. For example, a clay soil will have a high water holding capacity, it will be difficult to drain, and more difficult for the root system to penetrate the profile. If your soil is predominantly clay include ripping and installation of tile drainage in your budget. On the contrary, sandy soil will have a low water holding capacity, very fast drainage, be really easy for the root system to develop in and it will not be necessary to install tile drainage. However, it may be necessary to install an irrigation system.

### ORGANIC MATTER (OM)

In the case of grapevines, the quantity of OM doesn't have to be exaggerated. According to the literature, values between 2 to 4 % are enough for good establishment and development of the grapevines. It is a good idea to know the previous use of the property. For example a corn field, dairy farm or a forest may have high OM, which could cause excessive vegetative growth on the vines.

### DRAINAGE

The main goal is to evacuate excess water from the profile and allow air circulation. In some cases, where the soil is heavy (mainly clay) the installation of tile drainage is recommended. In other cases, where the filtration is fast enough to avoid problems, for example a sandy soil, it can be skipped. Another consideration is whether the soil profile contains a hardpan layer or compaction. It will be necessary to destroy the hardest part before the installation of tile drainage. ([Got Compaction?](#))

## TOPOGRAPHY

### ALTITUDE

According to the literature, for every 100 meters in altitude, the temperature decreases between 0.5 to 1 degrees Celsius. A study done in Annapolis Valley between 2004 and 2008, shows the importance of being in higher altitudes to avoid spring and fall frost [Wine Grape Site Selection in Nova Scotia](#).

### SLOPE

Usually the best locations have an incline. In this way, the excess water can be moved downhill and it doesn't stay in permanent contact with the root system. The slope should be considered carefully, as a very steep slope can negatively impact the environment, for example, by increasing the amount of erosion. Also, tractors have to be able to work in the vineyard without taking unnecessary risks for the driver and the maintenance of the vineyard. Values up to 15% are acceptable for the growth of vines in our conditions without the need for high investment.

### NORTH OR SOUTH EXPOSURE

It is commonly known that a southern exposure is better than a northern one. One of the main reasons is the longer exposure to the sun's radiation during the day. However, this is not a rule; there are some places where a northern exposure will not give bad results and is not so different from the southern one. Every case has to be considered depending on the area, the topography and landscape around the location.

