



Fact Sheet

Viticulture

HONOURING EACH WINE'S PLACE OF ORIGIN

Just as the French existentialists said that we must always be true to ourselves and our inner character – the practitioners of organic and biodynamic viticulture put “nature’s way” first.

Philosophy

Le Clos Jordanne Estate vineyards are dedicated exclusively to organically grown fruit, which is processed very gently in order to preserve the unique characteristics of its place of origin.

The four vineyard sites are all located on the protected Niagara Escarpment, and every effort has been made to preserve the surrounding forests, ravines and streams. For example, the principal vineyard, Le Clos Jordanne, has environmentally-protected forest, woodland and pond nature areas on three of its four sides, all of which have been left in their natural state.

Organic farming principles protect biodiversity and increase microbial life in the soil, which enriches the vineyards, and allows the distinct flavour of the terroir to be expressed. Respect is paid to the vineyard as an integral part of the environment that surrounds it, ensuring that the vineyards are balanced within the ecosystem.

An extension of its organic principles is the team’s biodynamic approach to viticulture, inspired by 19th century Yugoslavian scientist/philosopher, Rudolf Steiner. His philosophy, in the simplest terms, recognizes that the forces of the earth such as gravity, light, and heat, along with the influence of the sun, moon, and planets, can be harnessed by farmers to optimize the health and balance of the soil and its plants.

Le Clos Jordanne’s viticulturists work with a biodynamic calendar, which enables them to plan activity at the vineyard at the most effective time. They have also been studying the effects of various biodynamic practices and preparations on the vines’ health and behaviour.

General Characteristics of Viticulture in the Niagara Peninsula

Known as a cool climate viticultural region, similar to Burgundy, Germany, Oregon and New Zealand, Ontario’s largest wine growing region, the Niagara Peninsula, is situated close to the United States border at North 43° latitude (south of Burgundy and on the same latitude as southern Oregon). With approximately 4,450 hectares (11,000 acres) of vineyards, and more than 60 wineries, it produces 75% of Canada’s grape volume. Lake Ontario to its north has a strong influence on the region’s temperatures, protecting the land thanks to its warm waters that have retained the summer’s heat. In the spring, breezes from its cooler winter waters help slow down the growth of vines until the spring frosts have passed.

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Equal in importance to the Niagara terroir is the Niagara Escarpment, which has been recognized by UNESCO as a World Biosphere Reserve. The Escarpment winds north 725 kilometres (450 miles) from Niagara Falls, in the United States, to Tobermory, at the tip of the Bruce Peninsula in northwestern Ontario. Once the shoreline of the ancient Lake Iroquois, the Escarpment's cliffs and waterfalls were formed by glaciers in the last Ice Age, 450 million years ago, which left the soils above its bedrock of sandstone, limestone and dolomites rich in loam, clay-loam, sand, gravel and minerals.

Between the lakeshore and the Escarpment today is a flat plain with rich deposits of gravel, sand, and lacustrine clays. Further up, the first bench of the Escarpment favours the growth of premium grapes thanks to its soft shale, sandstone, and limestone.

In cool viticultural regions such as Burgundy and Niagara, limestone-derived soils are highly valued. In the presence of limestone, certain varieties (particularly Pinot Noir and Chardonnay) can show wonderful floral notes, racy acidity and elegant minerality.

There is a key distinction, however, in the forms of limestone found in Burgundy and Niagara.

In Burgundy, the limestone is part of the 'mother rock' that is found deep beneath the surface of the earth. To access this valuable resource, new vines have to work extremely hard to push down their roots to the layers of core rock, and it can take up to 25 years before the vines can share any of the limestone's character with the grapes in the vineyard.

In contrast, the limestone found in the Niagara Region is crumbly and its characteristics are easily absorbed by vines of a very young age. The team of viticulturists that planted Le Clos Jordanne's vineyards was both surprised and delighted to learn this, realizing that they would not have to wait for decades for the vine roots to dig deep. All their vines, however young, would be able to develop the minerality that is so important to both Pinot Noir and Chardonnay wines.

The Niagara vineyards also benefit from the circulating airflow that is triggered by the offshore breezes bouncing back from the face of the Escarpment. This constant movement of air also prevents cold air from settling during the winter freeze, maximizing the moderating effect of the lake's warm waters.

Niagara and Burgundy both enjoy a continental (as opposed to maritime) climate with similar annual rainfall of between 700 and 800 millimetres (approximately 28 to 32 inches).

While cool climate regions have shorter growing seasons, the rate at which grapes lose acid and gain sugar is slower than in hotter climates. This leads to complex flavour profiles unique to Niagara. In assessing the temperatures during the spring/summer growing season, a recognized measure, described as "growing degree days" is useful, and charts when the daily temperatures are above 10°C (50°F). The Niagara Peninsula reports an average 1,426 growing degree days, compared with 1,315 in Beaune, Burgundy, 1,250 in Oregon, USA and 1,227 for Waipara in Central New Zealand. In Niagara the range has been as low as 1,060 degree days in the coolest vintage (similar to Epernay, France) to 1,670 degree days in the warmest vintage.

Le Clos Jordanne: Four Distinct Vineyards

1. *Le Clos Jordanne Vineyard* (the estate's principal vineyard) is characterized by its tranquility and unique setting on a natural plateau near the slope of the Escarpment. It enjoys light limestone soils created by the ancient ice shield, with rich sediments. Its wines are considered to be some of the best within the Le Clos Jordanne Estate, falling into the luxury category.

- The vineyard is located at 2738 King Street, Jordan Station, at the T-junction at Jordan Road and Highway 81.
- Its altitude is 115 metres (337 feet)
- Total hectares planted: 7.59 (19.26 acres)
- Two blocks of Pinot Noir and two blocks of Chardonnay were planted in 2000.
- Four additional blocks of Pinot Noir were planted in 2001.
- An additional block of Pinot Noir is expected to be planted in the future.
- Plant spacing: 2.1 metres x 0.9 metres (7 feet x 3 feet)
- Total number of vines: 40,162
- Vines per hectare: 5,292; (2,143; per acre)
- Yield (2005): 14.9 tonnes (6.5 tons)
- Tonnes per hectare: in 2005, 2.1 tonnes on average, (or .85 tons)
- Targeted 2005 yield, in cases: 1,000

2. *Claystone Terrace Vineyard* is characterized by its heavier, moist, dark clay soils. Its first wines have been described as robust and masculine in character, with rich fruit, tightly wound around a core of minerality, acid and tannin.

- The vineyard is located at King Street and 17th Street in Jordan.
- Its altitude is from 110 up to 120 metres (approximately 360 to 393 feet)
- Total hectares planted: 9.91 (24.48 acres)
- One block of Chardonnay was planted in 2000, along with four blocks of Pinot Noir and one block of Pinot Gris.
- A second block of Chardonnay was planted in 2001.
- Plant spacing: 2.1 metres x 0.9 metres (7 feet x 3 feet)
- Total number of vines: 52,441
- Vines per hectare: 5,292 (2,143 per acre)
- Yield 2005: 24.27 tonnes (26.75 tons)
- Tonnes per hectare: in 2005: 2.6 tonnes on average (1.05 tons per acre)
- Targeted 2005 yield in cases: 1,000.

3. *La Petite Vineyard* is the smallest and most easterly of the vineyards, located two kilometres east of the Le Clos Jordanne Vineyard and Claystone Terrace Vineyard. It enjoys slightly better drainage than the other vineyards and somewhat warmer temperatures, which have a more pronounced effect on its wines. On the other hand, it requires more care in the heat of the summer.

- The vineyard is located at 11th Street and Robbins Avenue, Jordan.
- Its altitude is from 106 up to 116.5 metres (approximately 347 to 382 feet)
- Total hectares planted: 3.25 (8.3 acres)
- Five blocks of Pinot Noir were planted in 2002.
- Plant spacing: 2.1 metres x 0.9 metres (7 feet x 3 feet)
- Total number of vines: 17,197
- Vines per hectare: 5,292 (2,143 per acre)
- Yield (2005): 2.32 tonnes
- Tonnes per hectare: 2.5 (2.32 tons)
- Targeted 2005 yield, in cases: 150. Unfortunately the grapes were mostly lost to winter damage.

4. *Talon Ridge Vineyard* is the largest of the four vineyards and, unlike the others, is located at the top of the Escarpment rather than at its base. It also faces south rather than north, which makes it less influenced by Lake Ontario's warming effect, but more influenced by the natural sunshine on its southerly slope. Its soils contain more stones, and with higher silt are more vulnerable when it rains. As a result of its cooler temperatures, the vineyard's wines are lighter and fruitier.

- The vineyard is located at 7th Avenue and 17th Street.
- Its altitude is 167 metres (548 feet)
- Total hectares planted: 27.14 (69.21 acres)
- In 2002 the vineyard was planted with 14 blocks of Pinot Noir, seven blocks of Chardonnay, four blocks of Riesling, one block of Pinot Gris and one block was reserved for a spacing trial.
- Plant spacing: one vine every 1.2 metres within the row (or 5 feet x 4 feet)
- Total number of vines: 137,443
- Vines per hectare: 5,555, (2,249 per acre)
- Yield (2005): 22.33 tonnes (24.62 tons)
- Tonnes per hectare: 2.5 were expected in 2005. However winter damage reduced the yield to less than one tonne per hectare.
- 2005 total yield in cases: While the vineyard produced the equivalent of 1,500 cases, this value will increase as other cuvées are added from the other three properties, after the 2006 harvest.

Given the young age of the vineyards, production in 2005 had been originally estimated at 50 per cent of the projected target when the vines have fully matured. That percentage dropped further as a result of the harsh winter.

At capacity, the yields from each of the vineyards should increase to 4 tonnes per hectare (or between 1.62 to 1.82 tons per acre).

Planting Strategies and Vineyard Management

The four vineyards of the Le Clos Jordanne Estate were all planted from 2000 to 2002. Within the 48 planting blocks among them, a wide variety of rootstock and clone combinations were chosen to suit the individual personality of each vineyard. Consideration was paid to the soils, directional facing and more importantly, the properties' ability to deliver fruit of unique character that would represent the vineyard and add complexity to the finished wines. The clones were hand selected and shipped to Canada from the Guillaume nursery in Burgundy.

While the majority of the clones were chosen from the classic Pinot Noir and Chardonnay varieties, the team also planted a small quantity of Pinot Gris, just as the Burgundian monks did hundreds of years ago. In colder years, Pinot Gris grapes lose their acidity faster, and blending a small amount with Chardonnay is known to add weight and elegance. In small quantities, it can also enhance Pinot Noir in the heat concentrated years.

Some Riesling vines have been reserved for making Icewine in the future and are an integral part of Le Clos Jordanne's long term strategy. Not only are the partners working together to make exceptional wines from the traditional Burgundian grape varieties, but they also plan to make some of the rare and exquisite Icewines that have earned Canada, and the Niagara Peninsula, countless accolades worldwide for its extraordinary dedication and talent in making these most coveted of all dessert wines.

The Pinot Noir clones included: 113, 114, 115, 667 and 828.

The Chardonnay clones included: 95, 76 and some 548.

The Pinot Gris clones included: 52 and 457, and the Riesling clones are Mercier 49 and Weis 21.

Rootstock selections included: 101-14, 41b, 3309c, Riparia Gloire, 161-49c and S04.

Unlike other wineries in the Niagara Peninsula, Le Clos Jordanne is moving towards the Burgundian practice of mixing up clones within planting blocks known as "sélection massale" in order to de-emphasize the taste profile of the clone, showcase the distinct terroir of each vineyard and to bring complexity to the finished wines. To date, a 1.3 hectare (2.3 acre) portion of Talon Ridge Vineyard has been replanted. Although the blocks were planted clonally, the viniculturists are vinifying the vats of wine geographically, defining them by their location (such as the east or the west vineyard) but ignoring any distinction made by block boundaries.

In the Niagara Peninsula, typical plant spacing is almost 3 metres by 2 metres (approximately 10 feet by 7 feet) which translates into 2,600 vines per hectare. These numbers are approximately half the density of the vines at Le Clos Jordanne Estate, where an average of 5,500 vines are planted per hectare. The yields at Le Clos Jordanne are on par with levels in Grand Cru Burgundy wines, which are very low for the Niagara region. Spaced tightly together, the Le Clos Jordanne vines colonize the land and compete against each other, resulting in far less fruit. However, the fruit that does develop is of a very high quality, having enjoyed good access to the nutrients in the soils, and the sun's energy and goodness. In other words, the mother vine has less shoots to nourish, which results in the young vines growing healthy and strong.

The planting strategy also involves promoting the vines' root development. Extensive above ground pruning has been used to promote the growth of the vines' root systems, making them deepen their roots to have greater access to the goodness in the soils. To this end, devigourating rootstocks were selected to help reduce the fruit quantity and increase the quality of the leaves and fruit. Cropping the vines has had a similar effect, maximizing concentration and complexity, while preserving the natural acidity balance. The resulting low yields also ensured that the grapes would achieve maximum ripeness in the shorter growing season and thicker skins on the berries, which in turn increases their immunity to fungal diseases such as Botrytis and Powdery Mildew.

The classic single Guyot pruning system is employed at Le Clos Jordanne Estate vineyards, and uses the single spur and single cane arrangement. The trellising system is Vertical Shoot Positioning (VSP) and the vineyard staff carefully guide the vines by hand to ensure optimal sunlight, air flow and ripening.

While the Niagara terroir shares many similarities with Burgundy, one point of difference is the drainage in the vineyards. Burgundy has steeper hills and broken chunks of limestone and pebbles in its soils which help the rains run off the vineyards while the heavy clays in Niagara can lead to surface mud that clogs plant growth. To prevent this, underground tiles were installed before planting the vineyards, and tilling is employed extensively at Le Clos Jordanne to help open up the soils. In addition, cover crops are regularly planted near the vines, and include various grasses; such as clovers, legumes and creeping fescue, which establishes its roots and spreads quickly, thus helping restore the natural rain and oxygen channels in the soils. These crops are continuously turned over to make the soils lighter and more friable (crumbly). Regular tilling also helps sustain the micro-organisms in the soils, providing nutrients for the vines.

The viticultural team at Le Clos Jordanne does not use any synthetic fertilizers; instead, the preference is to till under the cover crop, which then becomes green fertilizer and promotes the growth of organic matter. The vineyard team fertilizes the vines naturally using Peruvian Sea bird guano, organic chicken manure and Acadian algae.

Only mined minerals, such as elemental sulphur and copper are sprayed to prevent fungal diseases, and copper build-up in the soil is carefully avoided by monitoring the metal levels that are applied each year. Similarly, sulphur levels are monitored to avoid killing beneficial insects. The viticulturists adhere to a system called "integrated pest management," meaning that before each spray, the risk of spreading disease is carefully evaluated and sprays are only applied when a high risk is present. When spraying does take place, there is no use of synthetic pesticides, synthetic fungicides or herbicides; instead, weeds are removed by laborious means such as hand-hoeing, or mechanically using an undervine mechanical weeder.

As opposed to early vineyard practices, which employed horses to pull the tilling equipment, Le Clos Jordanne vineyards use specially imported over-the-row "enjambeur" tractors for this task, one of a small number of activities that are not carried out by hand. The enjambeur tractors are very light for their size, with oversized, low pressure tires that ensure that the tractors "tread lightly on the land."

The Clos Jordanne's vinicultural team is passionate about its work in the vineyards and insists on nurturing them with as little human or mechanical intervention as possible, as is "nature's way." They work day and night to ensure the healthy growth and safety of the vines, treating them with love and respect. This collection of wines exemplifies a true "labour of love."

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