Sangiovese Viticulture and Winemaking: an Italian Perspective

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Tuscany: soils and climate
Tuscany is on the western side of central Italy. Chianti is the central part of Tuscany, the region between the cities of Florence in the north, and Sienna in the south. Chianti is a region—not simply a wine—although even in Italy this is not always understood.

Wines are marketed under the appellations Chianti Classico and Chianti. For many years, prior to the recent definition of Italian wine appellations, some producers outside the classical region had been using the name Chianti. Consequently, these producers were allowed to continue to use the name Chianti, and the new name Chianti Classico was given to wine that actually came from the traditional geographical area.

Tuscany used to be a sea-bed. Soil types in Chianti are therefore very diverse, because of the mixture of the old sediment from the sea and the eroded rock and soil of the hills of the former land. Even on the same estate, many different soils may be found. A clay soil known as galestro is considered to be the best for Sangiovese. Other soils include some sandstone or limestone, or may be pure clay soils with high water retention, which are inappropriate for Sangiovese. Generally, the soils on the flat land are unsuitable for Sangiovese; most is therefore planted on the hills.

Chianti is much cooler in the spring than Piedmont, which is surrounded by the Alps. This results in different rainfall patterns and the accumulation of heat in the valleys. Chianti receives westerly breezes from the sea, which cause late, cool and quite wet spring weather. The mid-summer period in Chianti is hot. The mean maximum in July is 24.5°C, with temperatures rising to 35–38°C on some days. This heat means that vine photosynthesis is inhibited in this intense period, and so the region is unsuitable for early-ripening varieties. September and October are usually quite mild but may also be very wet; ultimately the quality of the vintage depends on the weather conditions during these two months.

The peak of rainfall may occur in autumn. If the rain starts before harvest, vintage may be very difficult. In 1992 Tuscany received 570 mm rainfall in October, during the harvest. The average annual rainfall in Chianti is 850 mm per year, but dry years also occur: in 1990 only 600 mm was received.

Thus, the region suffers from extreme variability in both soil and in climate.

Tuscany: social history
A nother important factor that has had an impact on Tuscan grapegrowing and winemaking is the social history of the region. The term ‘fattoria’ does not mean factory, but an estate organised on a share cropping system. This system dates from the Middle Ages, and was common in central Italy. It was a mixed farming system, with nearly everything required being produced on the estate. The produce was then divided between the owner of the estate and the families involved in the share cropping.

Almost 60% of the Italian labour force was involved in agriculture until the early 1960s, but with widespread industrial development, and the migration of the general population to the cities, this situation changed rapidly. Many landowners who had relied on manual labour rather than mechanisation faced problems in finding people, and those who could not afford the investment needed to mechanise were forced to sell their properties. Others sold a part of their properties, in order to invest the money in their remaining land.

To assist this process of social change, the European Union launched a funding program which contributed to the establishment of 7,000 ha of new vineyards in Chianti from 1967–72. The earliest modern plantings at Isole e Olena date from 1967. The new plantings differ markedly from the old vineyards, which were part of a mixed farming system with vines growing between olives and wheat. The cuttings used in this period, including Sangiovese, were not from certified material as the nurseries were not ready for such rapid expansion.

At the same time, the appellation rules for wines made in Chianti were established. These rules required the inclusion of some varieties of white grapes in Chianti which, with the difficulties in selecting good planting material and the use of traditional winemaking methods, appropriate for making wines for local consumption, meant a collapse of the market. Many of the new owners sold their estates again.

Some good producers quickly realised that the rules had to be broken in order to improve the quality of the wines of Chianti. The first vintage of Antinori Tignanello was 1971—only four years after the appellation rules were introduced. The wines known today as the ‘super Tuscan’ evolved at this time. These wines may be made entirely from Sangiovese, or from non-traditional Tuscan varieties, or from blends of these and Sangiovese. The blends were a quick solution to the quality problems, but in the 1980s makers came to realise that the best long-term solution was to improve the quality of the Sangiovese fruit available—not just to blend with other varieties.

This is not always easy, due to Italian and European Union regulations on planting. While Sangiovese is the most important variety in Tuscany, prior to the appellation revisions of 1967 there was a very rich selection of minor local varieties. The appellation rules restricted the planting of these varieties—which is now considered to be a mistake. Work is currently being undertaken to preserve and maintain these old varieties. Other varieties permitted include Cannaio (red), and Trebbiano and Malvasia (white), and the rules now allow the inclusion of 10% of most of the minor regional red varieties.

Sangiovese: genetic variation and diversity
Much has been said about the genetic variability of Sangiovese, but it must be understood that this variability is not a problem, but an asset, considering the variability of soil and climate.

Many people regard Barbera as the most widely planted variety in Italy, but this may reflect problems in Italian statistics. Sangiovese is planted from the north-east of Italy (where
German is spoken), all the way to Sicily in the south. In each region the names of the clones may vary, and this is compounded by the observation that the apparent ampelography may differ from year to year. At Isole e Olena we are trying to make selections from our own vineyards. Research is also underway to determine the distribution of the five main biotypes in the growing area of M ontalcino.

In 1964 the Department of Agriculture listed only two variants of Sangiovese: Sangiovese ‘grosso’ and ‘piccolo’. Sangiovese grosso was characterised by its larger bunches and berries, compared to Sangiovese piccolo. These two classifications were later divided into smaller sub-groups depending on berry size and bunch size, but these distinctions are not always apparent in the vineyard—vines with the characteristic leaves of Sangiovese grosso may, for example, have small berries. It is not known how much of the observed variability is due to the genetic basis of the plant and how much is due to the growing conditions. In making a clonal selection it is therefore important to consider the planned site: the soil, the management practices, and so on. If the vine yields big berries and big bunches the wine may not be of high quality, but this is a problem of viticultural practices, not genetics.

This is not intended to suggest that the new clones do not offer improved quality, but simply that other factors need to be considered. There are currently approximately 35 certified clones of Sangiovese, many of which are being assessed by several producers, with some interesting results. For example, clone R24 is giving very good results, with small berries, loose bunches, and a high concentration of phenolics in the skin. The Sangiovese of M ontalcino does not perform well in Chianti, simply because M ontalcino has a warmer climate than Chianti. Romagna has a cooler climate than Chianti, and Sangiovese of M ontalcino would probably perform better there.

In the five years to 1987 the average grape yield at Isole e Olena increased by an unplanned 67%, and the vineyards were more efficient due to some mechanisation. The vines had been planted where the old share-croppers had previously planted wheat, in deep soil, because production costs were lower and yields were higher. It was apparent, however, that quality Sangiovese wines would only be made from quality grapes, and it was decided to work toward this aim. It was necessary to plant on hillside sites which offered greater light and wind, and less humidity.

While Sangiovese normally has two (and very often three) bunches per bud, what is required is a clone that gives one bunch per bud. This would allow easy control of yields, especially in new vineyards in which the density of planting is being increased. This latter factor is very important to the quality of Sangiovese.

V ineyard practices

A regional project has been established in the Chianti Classico region to address several viticultural issues. It is important to note that what is appropriate in Chianti is not necessarily so in Australia. Irrigation is an example: it may have an effect to reduce the inhibition of photosynthesis during the very hot mid-summer period in Chianti. With higher vine density, irrigation could be linked to vine vigour, and the vintage variation may be reduced by producing a lower crop per vine. In a standard vineyard, however, serious problems may be encountered in the event of rain during vintage.

The Chianti vineyards planted in the late 1960s typically have 2.0 m between rows and 1.2–1.5 m between vines, which equates to 3,000 vines/ha. New plantings at Isole e Olena are spaced with 1.70 m between rows, and 1.6 m between vines. Sangiovese is traditionally cane-pruned with two canes per vine, but in higher density plantings the vines are pruned to one cane and one spur, which gives 6–10 buds per vine. Therefore, a vineyard of 5,000–7,000 vines/ha has 40,000–45,000 buds/ha. This has an effect on quality: a typical Sangiovese bunch weighs approximately 200–300 g, but increased vine density results in smaller bunches. This gives fruit with a better juice to skin ratio, and a better yield.

The trellis normally has the first wire at 0.5 m, and there is a need to maximise leaf growth to utilise the vertical double wire trellis. A other effect of increasing the vine destiny is to increase the leaf surface/ha. At Isole e Olena, a trial with higher density plantings has given wines with higher pH, higher sugar, better tannins and deeper colour—all of the things wanted. Of course, this is achieved at the expense of increased production costs.

Most of the old Chianti vineyards have been planted on Kober 5BB rootstock, which has proven to be too vigorous. The vineyards of Isole e Olena have a lot of 20A, which is a good rootstock. In the new vineyards, where there is not an excess of calcium, 3309 has given good results, with shorter internodes on the canes.

W ine making

Just as the quality of the grapes is changing, so too are the wine-making techniques. Fermentation in closed tanks with pumping over is traditional in Chianti and maceration times vary considerably between makers: from only 5–6 days to considerably longer. At Isole e Olena the maceration time is very varied, depending on the vintage, but 20 days is quite normal. A longer time may be employed for the best parcels of fruit.

Malolactic fermentation (MLF) is routinely sought, as Sangiovese has a low pH even when the total acidity is low. Complete MLF is sometimes difficult to achieve, so the wines are often inoculated with an active culture.

Aging in wood is very important, and small oak vessels are increasingly being used. However, the ability of the wine to support ageing in small new barrels will depend on its richness, and how the grapes were grown.

Many styles may be made, from a fruity rosé, to a wine to be drunk when young, to a classic style for long ageing. The big problem is that the market is ready to pay high prices only for a certain type of wine, and high prices are required because of high production costs. Many makers therefore seek to produce this style—but this is only possible with quality grapes. The biggest mistake that could be made with Sangiovese would be to try to make a wine from inferior, inappropriate grapes.