

2. viticulture and vinification

In the vineyard



ABOVE AND BELOW
Deinhard in Germany and
Sileni in New Zealand; 350
years apart. Considering the
time span, surprisingly little
has changed in vineyard
work. But science means we
can better explain practices
that were only understood
empirically before.



The principle is simple enough: fully ripe, quality grapes plus intelligent winemaking equal good wine. Of course it's more complicated than that, but as a basic equation this is a useful generalisation.

It is impossible to make good wine without good ingredients in the first place. And then, however good your ingredients and your equipment, without common sense and a good palate* as guides, it is easy to make a mess of the winemaking recipe. The parallels with cookery, and gardening, are numerous. The grape variety and the climate in which it is grown are the two seminal influences on the final style and quality potential of the wine.

Grape variety

The choice of grape variety will depend on what type of wine you have in mind and, more importantly, how it will flourish in the vineyard at your disposal. Of the two, the latter is the more important initial consideration because if your grapes won't ripen in the first

place, you can forget about the niceties of style. Different varieties, like any plant, have different requirements and some are choosier than others.

Climate

Where your vineyard is situated matters more than the specific site or the type of soil, for this will govern the three crucial variables of temperature, water and light. All three are essential, in moderation.

Sunshine is the primary requisite for the photosynthesis which produces the grape's sugar. It works most efficiently, as does the general ripening of the grape, when the temperature is warm but not excessive, somewhere between 15 and 30°C (60–85°F).

The vine can no more survive without water than you or I, and inadequate water inhibits photosynthesis and the whole ripening process. Too much water, on the other hand, tends to produce oversized grapes and/or excess vegetation, both of which result in unripe or dilute flavours.

Site

A wide range of vineyard sites produce good wine all round the world. Pronounced gradients or the direction in which the vineyard faces (aspect) are of special significance only where they are needed to moderate extremes of weather



and climate. Slopes make for good drainage after heavy rainfall and provide a slipway to lower ground for frosty air. A slope, along with a sun-grabbing aspect, concentrates the limited sunshine in marginal climates, whereas in hot climates, high altitude and/or a slope facing away from the sun can temper the heat.

Soil

Even if our palates appear to taste mineral or earthy impressions* in many wines (and they do), there is no scientifically proven correlation between particular soils and specific tastes.

What science has shown is that the most important role of soil is in ensuring a constant, but not excessive, supply of water to the vine, as well as adequate air circulation for the root system. Both of these depend much more on soil structure than on its chemical constituents.

Ideal soils for wine are also low in fertility, so that the vine doesn't grow too vigorously*. Where specific soil types* seem important, they are discussed in connection with the relevant grape varieties.

Viticulture

Good winemakers will know their grapes and vineyard intimately. They will literally have their footprint in the soil. And they will tell you, as will any gardener, that every year is different in the vineyard. If there are general principles, there are no precise formulas. The goal, though, is always the same: ripe, healthy grapes at harvest time. In addition to keeping

the vine and its fruit disease-free, the main challenge is in 'managing' the leaf canopy, ensuring a balanced vine that will ripen the fruit as required.

A balanced vine

This refers to an ideal area of leaves exposed to the sun to provide sufficient sugar for the weight of fruit on the vine. In poor, low-fertility soils – those with an abundance of stone, gravel, rock, slate – the vine's natural vigour is controlled so that not too much effort need be expended on its training or management, and its leaf to fruit balance is relatively easily achieved.

This is the case with most European vineyards. But given half a chance, in so-called 'vigorous', fertile soils (much of the New World), the vine will put all its energy into producing abundant greenery. This results in too much shade within the canopy. Many leaves then don't photosynthesise efficiently. The new shoot tips, especially, compete for the vine's sugars, and the grapes don't ripen properly, leading to thin, green, herbaceous and peppery characteristics in the wine.

Trimming the vegetation often simply encourages it, so the solution lies in numerous different forms of training the vine to achieve the right balance. Too much fruit (from insufficient spring pruning) can have the same unripe consequences: there simply isn't enough sugar to go round! (See photographs and captions p38–9.)

ABOVE Morning fog above the Sonoma and Napa valleys in California; created by the cold Pacific Ocean, and drawn through the coastal valleys by the rising heat of inland California. These fogs help cool the valley floor vineyards during the hot Californian summer, making for better balanced grapes. Vineyards the world over have local climatic features which make their grapes and wines what they are, subtly different from others.

*See also

earthy impressions 129,
145
good palate 51
specific grape/soil
combinations eg:
riesling 62
cab sauvignon 83-4
merlot 93
champagne 107
vigour 38-9

the grape

When is a grape ripe? From a biological or physiological point of view, it might be considered ripe when its pips can reproduce the plant, or when its sugar content is at a maximum. The winemaker's viewpoint, however, is not quite the same.

Ripeness

From a winemaking point of view, ripeness (ie when you want to pick) is when sugar, acid, skin colour, flavour and tannin are all at the ideal level for the type of wine you want to make. This is difficult to define in theory, even more so in practice.

Theoretically the 'ideal' occurs when these important parameters all coincide at their optimum level. But if sugar and acid levels are relatively easy to measure scientifically, flavour and tannin ripeness are not; indeed, sampling the grape is probably the best way of deciding whether these are 'ready'. In practice the grape's ripening pattern differs according to the climate,

location, annual weather pattern, and even varies within bunches of the same grape.

More mundane realities may also be at least as pressing in deciding when to pick: Are the heavens threatening to open? Have you got all the pickers you need? Or if you own part share in an expensive mechanical harvester, is it your week to use it? The timing will be a compromise, more often than not.

Yield

Yield expresses the volume of wine which results from a given weight of grapes, or from the grapes harvested on a given area of land. This depends on numerous factors such as grape variety, pruning, vine age, weather conditions, irrigation, and economics.

The oversimplified wisdom is that the lower the yield, the better the quality of the wine. And as yields can be 'managed' to a large extent, especially by pruning methods and irrigation, how much wine to make is usually a calculated compromise between demands of the bottom line (more wine, blander taste, greater income) and quality considerations (less wine, more intense flavours, but fewer bottles).

The correlation between quantity and quality is a definite but by no means a direct one. White wines are less affected than reds because the grape's skin is not used during vinification, whereas the proportion of skin to juice clearly matters in red winemaking.

Very high yields retard ripening and certainly dilute flavours in all grapes, but very low yields, especially for red wines, probably end up offering diminishing quality returns.

Sugar

Sugar, in the form of glucose and fructose in roughly equal proportions, accumulates continually as the grape ripens. Its rate of increase is accelerated above all by high temperatures, and retarded by a heavy crop of fruit, excess vegetation competing for sugar, poor photosynthesis as a consequence of cloud cover, and either very low or excessively high temperatures. As the principal source of alcohol, or of sweetness in sweet wines, it is the most important measure of ripeness, but certainly not the only one. Sugar ripeness is not necessarily overall ripeness. Take two extreme, but not unusual, examples:

Hot New World climate, red grapes: the grapes can be sugar ripe, already past the optimum acid level, yet with their ideal flavour and tannin ripeness still lagging behind. Waiting for the tannins to mature (a longer 'hang time') will improve the flavour, but entail the disadvantages of yet lower acid, which can be corrected later, and higher alcohol, which cannot. Result: potent, flavoursome wine after some acid bolstering.

Cool New World climate, white grapes: with plenty of sunshine, white grapes can be sugar ripe and flavour ripe, but still with too much acidity (cool temperatures, cold nights). Waiting for the acidity to fall will also mean allowing the sugar to go on rising. Result: wine with both high alcohol and, still, a relatively high acidity (even after malolactic fermentation), both hot *and* hard on the mouth.

These ripening problems can be evened out to a large extent by experimentation with grape varieties, training methods and canopy management, but you only get one attempt a year so the solutions don't appear overnight. In much of northern Europe, insufficient sugar (often as a result of greedy yields and therefore barely ripe grapes at harvest time) can be corrected by chaptalisation (see pp44-5).



ABOVE Drip irrigation on the vineyards of Cloudy Bay in New Zealand. Vines need regular water to keep them alive and healthy (just as we do) where there is not enough rainfall. Quality vineyards avoid excess watering as it dilutes flavour.

One of the advantages of these variations is, of course, the diversity of styles on offer, but good balance remains good balance whatever the style. As a consequence of perceived critical and public taste (and possibly global warming?) there has been a definite tendency in the recent past to aim for later picking, so as to get riper fruit, and, willy-nilly, higher alcohol. This has been facilitated by vineyards that are healthier on the whole, and by many of the new vine clones which ripen rapidly and early. But whilst some wines wear their high alcohol well, I feel that a greater proportion are uncomfortable with it.

For most table wines, a well-balanced 12.5-13% alcohol is an easier drink (if not a more impressive taste) than 13.5-14%. Indeed one of the major challenges for hot-climate viticulture now appears to be how to get grape *flavours* ripe at somewhat lower sugar levels (see also cultured yeast caption p49).

BOTTOM FAR RIGHT A winemaker with his footprint in the vineyard, who knows his soil and fruit intimately, will make better harvest decisions and better wine. Like Hubert Laferrère here, starting a new vineyard from scratch in the Mâconnais, France.

BELOW Spring pruning aims to keep the vine healthy and to limit the number of grape bunches, avoiding excess yield.



