Sparkling wine production in the southeast of England

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SPARKLING WINE PRODUCTION WORLDWIDE

In 2010, 2.5 billion bottles of sparkling wine were produced which equalled 7% of the world's total wine production (FranceAgriMer 2012). A quarter was produced in France (of which 50% was in Champagne), 15% in Italy (a quarter of which was Prosecco) and also about 15% in Germany. The fourth largest producing country is Spain, making western Europe the main area of sparkling wine production. In France, besides the Champagne region, many regions produce some crémants (in the Bordeaux area, the Loire valley, Alsace...); others produce some very traditional wines like Blanquette de Limoux, in Languedoc, and Clairette de Die, in the Rhône valley. In Italy, the main sparkling wines are Asti Spumante produced in Piedmont, Franciacorta, in Lombardy, and Prosecco, in several north-eastern regions (Veneto, Friuli...). German Sekt is produced along the Rhine, but around 90% of German Sekt is made at least partially from imported wines from Italy, Spain and France. Most Spanish sparkling wines are Cava, almost entirely produced in the Penedès area in Catalonia. It is worth pointing out that important volumes of sparkling wines are also produced in Russia, next to the Black Sea, and the US, mainly in California, and that most wine regions worldwide produce some sparkling wine.

English and Welsh wines are emerging with several recent significant international recognitions (e.g. best wine winning at Bollicine del Mondo 2009 and Decanter World Wine Awards Overall 2010). The producing area is, however, still very marginal with a total planted area of 1384ha in 2011 but growing quickly, nearly doubling since 2004 (EWP 2013). Sparkling wine production now exceeds still wine production and will certainly become the dominant sector in the near future, as most of the new plantings are for sparkling wine

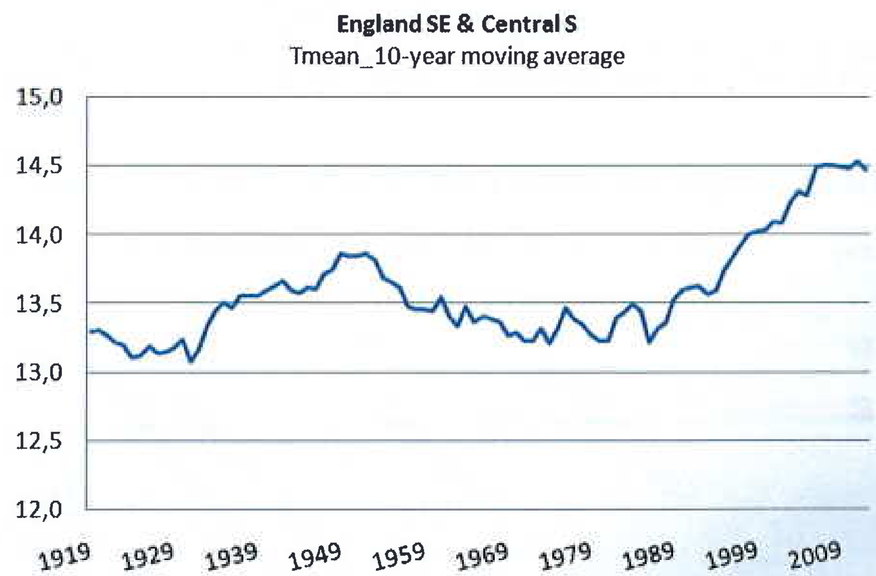

Figure 1. The 10-year moving average of the mean temperature over the growing season in the southeast of England. Source: MetOffice, 2012

production. Most premium sparkling wine producers are located in the southeast of England between the latitudes 50 and 51°N. This latitude has been commonly considered as the limit for viticulture in the northern hemisphere. However, the increase of local temperatures over the last three decades, as shown in Figure 1, and the specific requirements for sparkling wine production demonstrate that the boundary could be pushed further north. This graph corresponds to the 10-year moving average of the mean temperature over the growing season in the southeast. Historically, the temperature was around 13.5°C but has increased significantly since the 1980s, to an average of 14.5°C in the last decade.

PHYSICAL AND GEOGRAPHICAL ASPECTS

Figure 2 represents several wine regions including West Sussex, in the heart of the southeast of England, according to the long-term average temperature and total rainfall over the growing season. Since the winter in the southeast of England is quite mild and the rain not strongly winter-driven, it can be indeed misleading to study only the annual data. West Sussex is part of a group including the Champagne, Alsace and Mittelrhein areas. By taking into account Figure 1 showing an average of 14.5°C during the growing season and how important half a degree's difference makes during the growing season on this side of the graph, it can be said that the current temperature and rainfall conditions in West Sussex are very similar to the conditions historically found in Champagne (i.e., before the 1990s).

The soils in the vineyards in Champagne are very much related to geology, as are those in the southeast

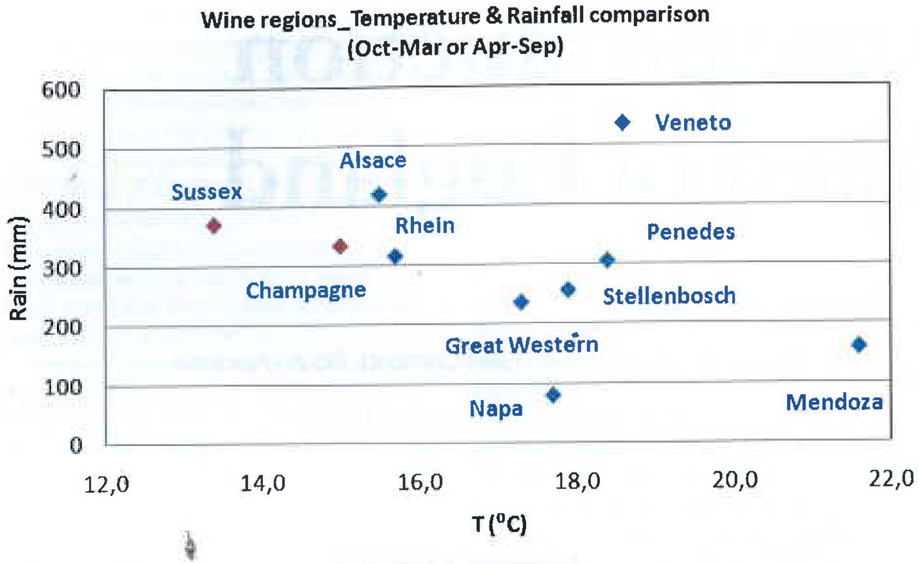

Figure 2. The long-term average temperature and total rainfall over the growing season for various wine regions. Source: Aquastat, 2012

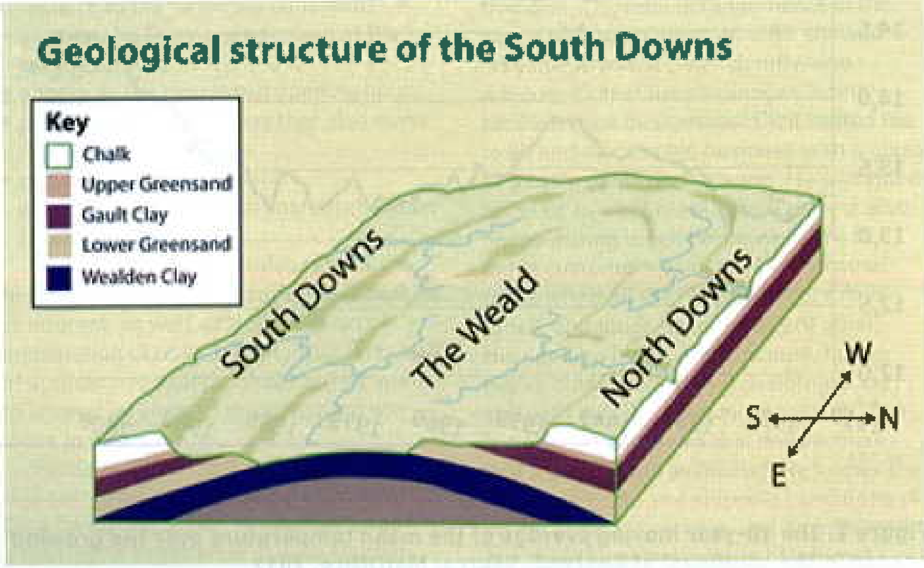

Figure 3. The various geological layers present in the southeast of England as a result of their formation and erosion. Source: SDNPA, 2012.

of England. The bedrock in Champagne and the southeast of England both date back to the Cretaceous. During the Lower Cretaceous period, 112 to 121 million years ago, thick deposits of mud and sand accumulated in southern England (the Wealden Group), which now outcrop in Sussex, the Isle of Wight and East Dorset. These were overlayed by marine sands and clays (the Greensand and Gault Clay) associated with the rise in sea-level and establishment of marine conditions over much of Britain. Deepening of the sea in the Late Cretaceous marked the onset of the deposit of large amounts of calcareous ooze on the sea-floor. These deposits later formed chalk, which originally covered much of Britain, but following erosion over millions of years, now only form outcrops in eastern and southern England. These chalk outcrops include the North Downs, which run from Surrey to Kent, and the South Downs, which run from Hampshire to East Sussex. Figure 3 shows the different geological layers present in the southeast as a result of their formation and erosion (SDNPA 2012).

There is indeed a close correlation between the bedrock and superficial deposits in the southeast of England. The chalk from the South and North Downs tends to give free draining, shallow lime-rich soils over chalk, the greensand gives acid, sandy and loamy soils with good underlying drainage, and the Weald slowly permeable, seasonally wet, loamy and clayey soils. The Gault formation can result in soils with impeded drainage, not suitable for vineyards.

PLANT MATERIAL AND PHENOLOGY

According to the UK Food Standards Agency, there are more than 60 grape varieties planted in the UK. However, Chardonnay and Pinot Noir represent about 40% of the total planted area (EWP 2013). Many German varieties are also used (Bacchus, Reichensteiner...) as well as hybrids (Rondo, Seyval Blanc...). The Judgment of Parson's Green, which is an English and Welsh sparkling wines tasting event organised every year since 2011, demonstrates that the wines made from Chardonnay and Pinot Noir are consistently much better scored than those using other varieties. This is an observation widely shared among the UK wine industry, and future plantings for sparkling wine production will undoubtedly focus mainly on the 'Champagne varieties'. Note that a wide range of rootstocks is used in the UK. SO4 seems to be the most widespread but Fercal, 41B, 3309C, 101-14MGt and Gravesac are also used.

In the southeast of England, Chardonnay and Pinot Noir budburst is around mid-April, as in Champagne. Flowering usually occurs at the end of June, i.e., two weeks later than Champagne. Veraison starts at the end of August, and the average picking date is mid-October. The number of days between flowering and harvest is a good indicator to describe a wine region, since it is generally a constant figure in the long-term. While 95 days are required in Champagne, 105 days are necessary in England. Note the Winkler heat summation index equals 920 degree days (°C) from 1 April through to 31 October, and the Huglin index (HI) 1445 from 1 April through to 30 September in West Sussex over the last decade. HI equalled about 1500 historically in Champagne, but is now close to 1600 on average with peaks close to 1800 recorded in 2006 and 1900 in 2003 (Beltrando and Briche 2010).

VINEYARD PRACTICES

Since there is no constraint regarding vineyard practices in the UK and the growers are keen to experiment, several planting densities and vineyard management strategies have been trialled. The trend is now to grow between 4-5000 vines per hectare, with a vine spacing ranging from 1-1.2m and a row width from 2-2.2m. The pruning style is usually single Guyot. The canopy is conducted in VSP, giving an exposed foliage area of approximately 12,000m²/ha. The ground is kept bare under the vines but with grass or cover crops in the inter-rows.

In order to benefit the most from the 1200-1300 sunshine hours recorded from April to September, the main sparkling wine producers have been carefully selecting their sites with gentle slopes of 5-10% facing south and planting vines with north-south rows (Figure 4). Target yield ranges between 6-10t/ha. All the grapes for sparkling wines are picked by hand.

ENGLISH SPARKLING WINE PRODUCTION IN THE FUTURE

There is a wide range of quality within sparkling wines, from poor to iconic. Also, it is not possible to consistently produce premium quality sparkling wines without an optimum balance between the production area, the grapes and the vineyard practices. There is no recipe either. It is about understanding each site, adjusting the practices according to the current conditions, and experimenting. It is a never-ending learning process. English wine producers are now strongly involved in a process of increasing their understanding of the interactions between factors such as soil, climate and vineyard practices in order to produce consistent and recognisable premium quality vintage after vintage.

The United Kingdom Vineyards Association (UKVA) sponsors the Protected Geographical Indication (PGI) and Protected Designation of Origin (PDO) wine schemes. PGI refers to English regional quality sparkling wines, while PDO to English quality sparkling wines. PDO is more restrictive and ensures that the grapes have come exclusively from the named area and are only Chardonnay, Pinot Noir, Pinot Noir Précoce, Pinot Meunier, Pinot Blanc and/or Pinot Gris, with a maximum yield of 80HL/ha. The production of the wine must also take place in the named area (UKVA 2014). Not all the growers adhere to these schemes though. The profiles of the English sparkling wines vary significantly between producers. Most producers, however, are developing specific qualitative characteristics which will certainly become soon a distinct English style. The next International C ool Climate Wine Symposium will be held in Brighton, England (26-28 May 2016), and details on the English identity should be revealed in due course.

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Figure 4. The UK's major sparkling wine producers have been carefully selecting their sites with gentle slopes of 5-10% facing south and planting vines with north-south rows in order to benefit the most from the 1200-1300 sunshine hours recorded from April to September.