11. Germany

For many consumers, Germany is synonymous with Riesling and covers almost one-quarter of the country's total vineyard area. Germany is the world's largest producer of this grape variety with nearly 40 per cent of world vineyard area.[1] Wines are produced in a full range of styles from dry to lusciously sweet and its sweet wines are amongst the world's finest. In the late 19th and early 20th centuries, the top German Rieslings commanded prices similar to those of classed growth Bordeaux and they are still enjoyed by a small but loyal following today.

Yet, for others, Germany is synonymous with inexpensive wines with medium sweetness, produced from varieties such as Müller-Thurgau and Kerner, specifically developed to produce high yields of ripe grapes in the challenging climate. By the 1980s, this style, often referred to as *Liebfraumilch* on export markets and labelled under brand names such as Black Tower and Blue Nun, accounted for around 60 per cent of all German wine exports.[2] Sales of this style of wine have plummeted since the 1980s as consumers, particularly in the important domestic market, turned to drier styles of wine, but Germany's reputation in export markets as a quality wine producer is only slowly starting to recover.

The history of the German wine industry has generally been one of ups and downs. Some of the most famous and influential vineyards date back to the Middle Ages, including Schloss Johannisberg and Kloster Eberbach in Rheingau, both of which were first planted in the 12th century. During this period, there was rapid expansion and, by the beginning of the 16th century, German wines were widely exported, helped by the proximity of the vineyards to the River Rhine (in German, *Rhein*), one of the most important waterways in Europe.

The industry went into rapid decline in the early 17th century due to the Thirty Years War. The flatter valley plains where vines had originally been planted were taken over for the more lucrative grain production, for bread and beer. Vineyards were pushed onto the steeper slopes, which remain such a distinctive feature of German viticulture today.

It took several centuries for the German wine industry to recover. The 1830s saw the introduction of new wine laws, based on the must weight of grapes, a principle which dominates German wine law to this day.

Germany only became a unified country in 1871: until then it had been a collection of states which were often at war with each other and not necessarily free to trade amongst themselves.

The late 19th and early 20th century saw the foundation of some of Germany's now-famous wine institutes, such as Hochschule Geisenheim University in Rheingau and the Julius Kühn-Institut in Pfalz. These have played a vital role in modernising the German wine industry and making it one of the most technologically advanced.

By the end of the 19th century, Germany had established a reputation for producing some of the world's finest white wines. It then underwent a major decline due the ravages of, firstly, phylloxera and mildew, and then the two World Wars. The area under vine halved in the 50 years to 1945. However, it has more than doubled again since.

Both wars had a devastating effect on Germany's economy and its exports. High volumes of inexpensive branded wines started to be produced. Grapes that could ripen reliably year on year, such as Müller Thurgau, were usually a key part of the blend, and grapes would be

Rudesheim, Rheingau

sourced from multiple regions, again, to ensure volumes. At the same time, Germany began a program of vineyard restructuring known as *Flurbereinigung* that involved the consolidation of many small, fragmented vineyards and the building of access roads, both aimed at increasing efficiency, making mechanisation easier and so reducing the costs of viticulture. Without this, many vineyards would have become economically unviable – sadly, in some areas, particularly in Mosel where such consolidation was not always practicable, abandoned vineyards can still be seen, although in some cases well-established producers or highly motivated younger winemakers have now re-cultivated such sites.

Although a number of wine laws had been passed before, the fifth German wine law in 1971 has laid the foundation for modern German wine production, establishing protected geographical labelling and classification of wine styles based on must weights.

Whilst bulk wines still dominate production, in the past thirty or so years, there has been an increased focus on quality which is slowly attracting global consumers back to German wines.

11.1. The Growing Environment and Grape Growing

CLIMATE

With the exception of Baden, Germany's main wine-producing regions lie around 49–50°N, making them amongst the most northerly in the world. Overall, the climate is cool and continental.

At this latitude, site selection is essential. Most of Germany's vineyards are situated along the river Rhine and its tributaries. The rivers play a vital role in radiating heat; moderating

Budburst on Riesling vines in Mosel

temperature and extending the growing season. The best vineyards are often on steep, south-facing slopes to maximum sun exposure. Some of the slopes are extremely steep, reaching gradients of 70 per cent overlooking the Mosel.

Winters can be very cold, usually cold enough for the production of *Eiswein*. In spring, frosts are a major risk, although this is mitigated by the rivers and planting on slopes. Summers are warm but also wet; rainfall averages between 500 and 800 mm and much of it falls in the summer. This increases the risk of fungal disease, dilution of grapes and, in heavy storms, hail.

Autumns, however, are long and dry, allowing for long ripening periods during which grapes can develop the high levels of natural sugar required for *Prädikatswein* and the morning mists along the rivers are ideal for the development of botrytis.

Also important are mountain ranges, such as the Taunus and Haardt, which shelter the vineyards areas from cold winds and the worst of the rain. However, at such high latitudes, vineyards are planted at relatively low altitudes, mainly below 200 metres above sea level.

Baden is further south, stretching towards the Swiss border. It is noticeably drier, warmer and sunnier than the others, although in cooler areas, spring frosts can still be a concern.

SOIL

Germany's vineyards are planted on a wide variety of soils. Soil type plays an important role in fruit ripening in the coolest regions. In Mosel and Ahr, for example, dark-coloured slate retains heat during the day and radiates it out again at night.

There are significant pockets of calcareous soils. In Baden, Pfalz and Rheinhessen, it is planted with Spätburgunder (Pinot Noir), Weissburgunder (Pinot Blanc) and Chardonnay, whilst

in Franken, it produces some of the best Silvaner. Grauburgunder (Pinot Gris) prefers heavy, more clayey soils.

Producers are increasingly interested in how grape varieties, especially Riesling, perform differently and show varying flavour profiles when grown in different soils.

On the steep slopes, such as those in the Mosel and Rheingau, erosion is a major problem and vineyard owners are regularly forced to winch soil and rocks back up the slopes adding to the cost of vineyard maintenance.

VINEYARD MANAGEMENT

In 2018, Germany had the seventh largest area under vine in Europe at around 100,000 ha. Average annual production was 8.7 million hL between 2017–2021.[3] Yields vary from vintage to vintage and from region to region but, in Rheinhessen and Pfalz, they can average over 100 hL/ha and, in the past, were even higher. In the 1980s, due to EU regulations, Germany was forced to impose lower maximum yields but, whilst these vary from region to region, they are still around 150 hL/ha for *Deutscher Wein* and *Landwein*, and 105 hL/ha for *Qualitätswein* (for more on these categories, see Wine Law and Regulations). Quality-minded producers, however, work with much lower yields (see, for example, the Verband Deutscher Prädikatsweingüter (VDP) in Wine Law and Regulations).

These high yields are achieved despite the challenging climate. Many of Germany's vineyards are at the northernmost limit for ripening grapes. There is considerable vintage variation and, in the coolest years and sites, grapes can fail to ripen fully. However, vintage variation has been reducing in recent years. Whilst this is undoubtedly due in part to climate change,[4] there have also been significant advances in vineyard management techniques, led by the various research institutes. Fruit ripeness has been improved by better clonal selection (especially amongst black grape varieties), summer pruning, green harvesting and selective hand harvesting.

Good canopy management is essential to maximise sun exposure and also to improve air circulation in order to reduce the risk of disease caused by the wet summers. On the slopes, vines were traditionally staked individually with canes tied at the top. However, this method is labour-intensive and requires skills which are gradually being lost and so, as a result of *Flurbereinigung*, all but the steepest vineyards now use single and double replacement-cane pruning with VSP trellising and *Pendelbogen*. (*Pendelbogen* is replacement-cane pruning with the canes arched in the trellis. The arching of the canes is thought to improve the flow of sap in the vine and increase the number of viable buds, in turn increasing yields.)

Germany is not widely suited to organic and biodynamic viticulture. Because of the risk of disease, growers still have to spray their crops

***Pendelbogen*-trained vine**

regularly. In Mosel, often the only practicable way to do this is by helicopter and it is likely that sprays would drift onto neighbouring vineyards, risking an organic producers' accreditation. Despite this, around nine per cent of German vineyard area is certified organic.[5] There is considerable support for sustainable viticulture.

The topography of many German vineyards is also challenging. On steeper slopes, vineyards are terraced or planted up the slopes. Mechanisation is difficult or even impossible and, in some cases, they are so steep that equipment and workers have to be winched up and down. Although new technology is being introduced (such as small caterpillar tractors that can negotiate steep slopes), and *Flurbereinigung* has improved accessibility and efficiency, the steeply sloped vineyards require substantially more labour than flatter sites. This increases costs significantly and often only Riesling can command appropriate, sustainable prices.

Even on flatter sites, labour costs are often higher than in other wine-producing regions. Whilst mechanisation is now widespread, German wine law (see Wine Law and Regulations) requires grapes for wines of *Beerenauslese* level and above to be hand-harvested and many producers still hand harvest for other *Prädikatsweine* to ensure healthy, fully ripe fruit. Large-scale commercial operations producing high-volume, inexpensive wines are highly mechanised and efficient, however.

GRAPE VARIETIES

Because of the cool climate, German wine production has traditionally been focused on white wine and grape varieties which can naturally tolerate the conditions, such as Riesling, or which have been bred specifically for that purpose (see German Crosses).

In 1980, 90 per cent of grapes planted were white. However, since then, red wine production has increased significantly and, in 2021, 32 per cent of plantings were black.[6] Much of Germany's red wine used to be light and fruity, often with residual sugar but quality has improved greatly, thanks to the development of better clones, particularly of Spätburgunder and Dornfelder, better vineyard management and winemaking techniques, as well as increasing temperatures in the vineyard.

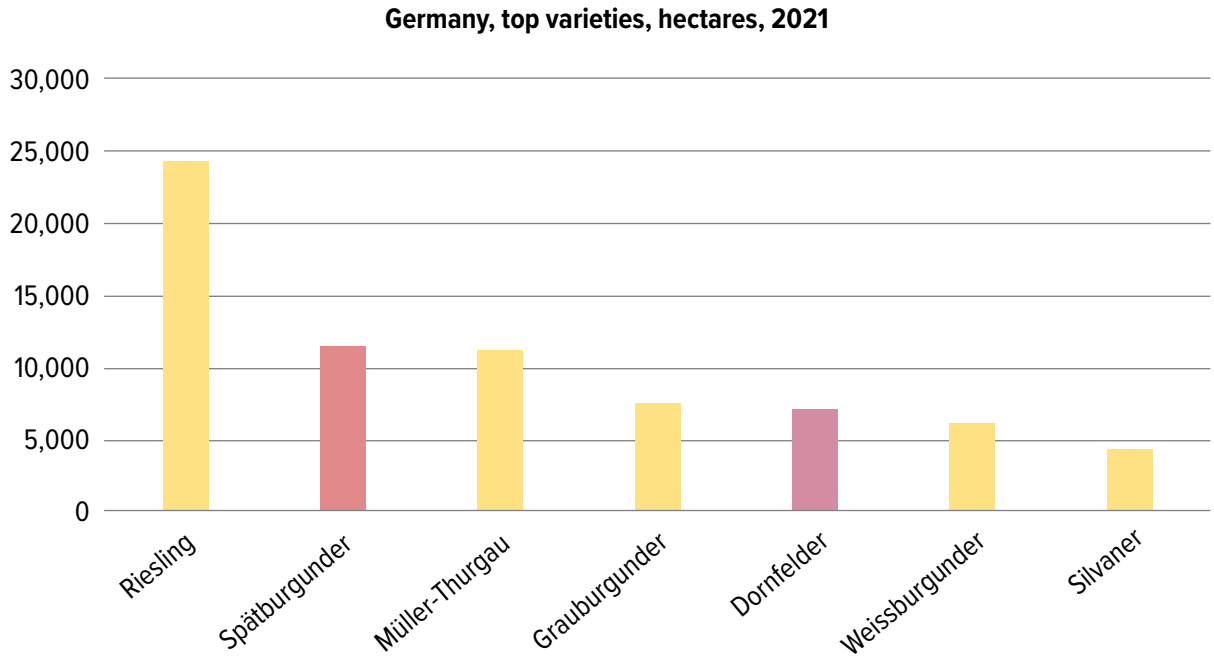
Since the 1990s, plantings of Grauburgunder, Weissburgunder and, to a lesser extent, Chardonnay have also risen considerably. Otherwise, there are only small plantings of other international varieties, with Merlot, Cabernet Sauvignon and Sauvignon Blanc showing some promise but in very limited volumes.

Grape varieties need not be stated on German wine labels but usually are.

Riesling

As stated, this Riesling accounts for nearly a quarter of all plantings. It has proven successful because it can survive the cold German winters and, being late budding with thick wood, is relatively frost resistant. However, it is late-ripening and needs good sun exposure and dry autumns; in cooler years and sites, it may not ripen fully. Because of this, plantings fell in the 1970s and 1980s as producers turned to the more reliable German crosses which could readily achieve the must weights required by law. However, improved vineyard management techniques and rising temperatures have led to greater consistency of ripening and plantings have recovered and are continuing to grow.

Riesling produces high-quality wines in a full range of styles, from dry to sweet. It retains high acidity even when fully ripe, providing balance in sweet wines and giving the wines



Source: Wines of Germany[7]

significant potential for ageing. In the right conditions, it can produce high natural levels of sugar and is susceptible to botrytis, making it ideal for producing sweet wines.

Riesling is capable of making wines with pronounced intensity and great aromatic complexity. Depending on ripeness, fruit flavours range from green fruit to tropical. It can also show floral aromas, such as white flowers or honeysuckle. With age, the wines develop toast, honeyed and petrol-like aromas.

Müller-Thurgau

Müller-Thurgau (sometimes known as Rivaner) was one of the earliest German crosses. Earlier-ripening than Riesling, it can produce high yields in almost any conditions. It was Germany's most planted grape variety in the 1970s and 1980s and was widely used in the production of inexpensive blends such as *Liebfraumilch*. However, as the popularity of such wines has fallen, plantings have more than halved. It has much lower acidity than Riesling (generally medium acidity) and gives wines with less structure and character but it can produce wines with attractive but relatively simple floral and fruity aromas for early drinking.

Spätburgunder

Spätburgunder is Germany's most planted black grape (11.5 per cent of total plantings) and has enjoyed a rapid rise in popularity, both domestically and on the export market. Plantings have almost trebled and it thrives particularly in warmer areas such as Baden.

Germany is increasingly being recognised as producing high-quality, complex and dry Spätburgunder, often with oak ageing. Vineyard management is constantly improving with producers using higher quality clones, perfecting canopy management and selecting harvesting dates to balance alcohol, acidity and ripeness of fruit and tannins. Some producers use whole bunch fermentation; the tannins from stems contributing to tannins without needing

to use oak for this purpose. In general, producers are tending to use less new oak and some are using more larger oak vessels than 10–20 years ago.

Other Varieties

Dornfelder is the most significant of the black German crosses and has grown from nothing to be Germany's second most planted black variety in the past 30 years. It produces wines that are deep in colour, high in acidity with fruity and floral notes. It is used to produce two quite distinct styles of wine: on the one hand, a fruity, easy-drinking style, occasionally with a little residual sugar, with aromas of sour cherry and blackberry; and, on the other hand, a more complex style with ageing potential produced from lower yields showing greater focus on tannins and structure, fermented or aged in oak. Dornfelder has been particularly successful in Rheinhessen and Pfalz where it is the most planted black variety, ahead of Spätburgunder.

Silvaner (Sylvaner in Alsace) plantings have also nearly halved since 1980, although the decline has now stabilised. Lower in acidity and less aromatic than Riesling, it, too, produces large amounts of simple, inexpensive wines with subtle fruit aromas that can range from green fruit to tropical fruit. However, where yields are controlled, in Franken in particular, it can produce high-quality, dry, medium- bodied wines with medium to medium (+) acidity and a distinctive earthy characteristic.

Silvaner has now been overtaken by both **Grauburgunder** and **Weissburgunder** which have grown considerably in popularity since the 1990s. There are now sizeable plantings in Rheinhessen, Pfalz and particularly in Baden. Both varieties can produce very good quality wines, some of which are aged in oak. Grauburgunder particularly likes heavier soils and can produce wines with medium acidity and aromas of stone fruit and tropical (sometimes dried) fruit and honey. In style, they range from dry and medium-bodied to fuller-bodied, sweeter wines (often labelled as *Ruländer*). Weissburgunder can produce well-balanced wines with medium (+) acid and delicate citrus and stone fruit aromas.

Chardonnay has only been allowed in Germany since 1990 and plantings remain very low. However, high-quality examples are being produced, often with oak ageing, in warmer areas such as the southern Pfalz and Kaiserstuhl in Baden.

Portugieser, **Schwarzriesling** (**Pinot Meunier**), **Trollinger** (**Schiava**) and **Lemberger** (**Blaufränkisch**) produce mainly simple, fruity wines for drinking young, especially in Württemberg. However, some higher-quality examples are now being produced from lower-yielding sites, particularly from Lemberger.

GERMAN CROSSES

These are a group of mainly white grape varieties developed by the various German wine institutes to cope with Germany's cool climate. One of the earliest examples was **Müller-Thurgau**, developed in the 1880s to ripen earlier than Riesling.

The number of new crossings increased rapidly in the mid 20th century as the drive for producing high yields of grapes with high must weights was encouraged by

the German wine laws (see Wine Law and Regulations). Unfortunately, most of the new varieties produced wines with a high level of sugar but without sufficient acidity or aromatic character to balance it. Nevertheless, they were widely used in inexpensive blends such as *Liebfraumilch*.

As techniques develop to allow better ripening of other varieties, in particular Riesling, reliance on and interest in the crosses has fallen considerably, even those which proved themselves capable of producing good-quality wines. **Scheurebe**, in particular, can produce full-bodied wines with intense aromas of ripe grapefruit and peach. Although acidity levels are lower than for Riesling, they are still high enough to make ageworthy wines and also some high-quality sweet wines. **Kerner** also produces good quality wines up to high *Prädikat* levels with high acidity and some of the fruity, floral characteristics of Riesling.

A number of black crossings were also developed, including perhaps the most successful of all, Dornfelder, which is now the second most planted black variety.

11.2. Winemaking

There is a wide variety of approaches to winemaking in Germany. Bulk wine still accounts for a large proportion of production but there are many small estates producing low-volume, high-quality wines (for more details see Wine Business). As in the vineyard, there have been significant advances in knowhow and technology in recent decades, driven by the research institutes and also winemakers gaining experience from elsewhere in the wine world. However, an increasing number are also returning to more traditional and less interventionist winemaking methods, such as fermentation with ambient yeast (helped by better harvests of healthy and ripe grapes) and reduced filtration and fining. There is also much experimentation, such as with lees contact and oak, particularly with Grauburgunder and Weissburgunder but in some cases even with Riesling.

Due to the cool temperatures, enrichment is a relatively common practice, although it is not permitted for *Prädikatswein*. Most of Germany's wine regions fall within EU Zone A, allowing enrichment of up to 3% abv; Baden is in Zone B, for which the maximum enrichment is 2% abv. However, the practice is becoming increasingly rare outside bulk wine production, due to consistently riper fruit.

De-acidification is also permitted, as is acidification but only in the hottest years. Again, however, these also now only tend to be used for high volume, inexpensive wines.

Traditionally, German wines were fermented and matured in large old oak casks to allow for some oxygenation, and some producers of premium Riesling still do so today. There is a range of traditional casks found around Germany's wine regions: for example, the 1,000 L *Fuder* of Mosel and the oval-shaped 1,200 L *Stück* used along the Rhine. German oak, especially from Pfalz, is popular particularly for large vessels, as is oak sourced from Central Europe. French oak is common for smaller vessels such as *barriques*.

However, in the past few decades, fermentation in stainless steel has become the norm. It is used for inexpensive wines in which the ease of temperature control and cleaning are important, as well as the ability to purchase extremely large vessels. It also does not introduce

Winemaking, Rheinhessen

any oxygen or add any flavours, so is still a common choice for mid-priced and premium Riesling (as well as other varieties such as Silvaner) to maintain its primary aromas.

New oak is rarely used for Riesling as it could mask the primary aromas. However, a proportion of new oak, often in the form of *barriques*, may be used for red wines as well as Grauburgunder, Weissburgunder and Chardonnay.

In the 1960s and 1970s, all but the finest wines with residual sugar were initially fermented to dryness but then sweetened post- fermentation, even at *Prädikatswein* level. This was done by the addition of *Süssreserve* (unfermented or partially-fermented grape must).

Süssreserve must be produced from grapes of the same region and the same quality level as the wine to which it is added. It is common for the *Süssreserve* and wine to come from the same must; producers take a small proportion of must pre-fermentation, clarify, chill and protect it with SO_2 so it remains fresh, and then add this must back to the fermented wine to create the desired level of sweetness. *Süssreserve* is added to the dry wine just prior to bottling; it contains minimal or no alcohol and therefore, depending on the volume added, may slightly reduce alcohol level of the final wine.

Süssreserve is thought to give less balanced wines and, whilst many large commercial wineries still use this process, quality-conscious producers follow the traditional method of making sweet wines by stopping the fermentation by adding SO_2, racking or filtering.

Sweetening through Rectified Concentrated Grape Must (RCGM) can only be used for *Deutscher Wein*.

Grapes destined for *Beerenauslese*, *Eiswein* and *Trockenbeerenauslese* have very high must weights and fermentation will usually proceed very slowly: *Trockenbeerenauslese* can take several months. Usually, the fermentation will stop naturally due to the high sugar levels, leaving high levels of residual sugar and low levels of alcohol (often between 5.5 and 8% abv).

Since the late 1980s, there has been a dramatic shift in the German domestic market towards drier wines and the vast majority of German wine is now produced in a dry (*trocken*) or off-dry (*halbtrocken*) style. Even in Mosel, which is famous for its sweeter-style wines, more wines are being fermented to dryness. Nevertheless, top producers remain committed to producing high-quality wines with some degree of sweetness and the best quality examples are amongst the finest in the world and still have an enthusiastic following.

Sweetness was often used to mask high acidity and bitterness from under-ripe grapes. However, German growers and producers have learnt how to ensure Riesling ripens fully and how to produce wines which balance sugar, acid and fruit characteristics.

Techniques for the production of red wine vary according to quality and price. Inexpensive wines designed for early consumption often undergo thermovinification for quick extraction of colour and flavour. The wine can then be fermented off the skins to produce a fruity red with low tannins. These wines will typically not be oak matured. By contrast, for higher-quality red wines, most particularly Pinot Noir, techniques such as cold maceration, whole bunch fermentation and maturation in oak are common.

Volumes of rosé wines produced are relatively small. Most are youthful and fruity, fermented at cool temperatures in stainless steel and bottled for release soon after. There are a small number of higher-priced rosés from quality-focused producers, some of which are aged in oak barrels.

11.3. Wine Law and Regulations

Germany's current wine laws date back to 1971, although they have been amended considerably since, creating a system that has often been criticised as confusing to consumers. The fundamental principle of German wine law has always been to classify grapes according to their must weight at harvest. There are few other rules regarding grape growing or winemaking, although, as previously explained, there are limited restrictions on yields.

Revised German wine law of 2021
In 2021, a revised German wine law was introduced that incorporated many of the features of the laws described in this section and added some new features. There will be a period of transition to introduce the new system until 2025. The revised law of 2021 is described at the end of this section.

There are four quality levels of German wine which are in increasing order of must weight, *Deutscher Wein*, *Landwein*, *Qualitätswein* and *Prädikatswein*.

DEUTSCHER WEIN

Formerly known as *Tafelwein*, this covers wine without a geographical indication made exclusively from grapes grown in Germany. Alcohol levels must be between 8.5% abv and 15% abv and they can be produced in any style. These are inexpensive wines intended to be drunk when young. *Deutscher Wein* usually accounts for a tiny proportion of annual production; together, *Deutscher Wein* and *Landwein* accounted for around 4 per cent of production of the 2021 vintage[8]

LANDWEIN

This category was introduced in 1982 and is the German equivalent of PGI wine.[9] At least 85 per cent of the grapes must originate in the *Landwein* region named on the label. As with *Deutscher Wein*, alcohol levels must be between 8.5% abv and 15% abv. In most

regions, wines can only be produced in a *trocken* or *halbtrocken* style (see Terms Indicating Sweetness), although in a few, sweeter styles are permitted.

QUALITÄTSWEIN

This is a PDO category but with less stringent regulations than that of the *Prädikatswein* category.[10] The grapes must come exclusively from one of 13 designated quality wine regions (*Anbaugebiete*), the name of which must appear on the label. Wines can be made in all styles and the minimum alcohol level is lower (7% abv) to allow for sweeter wines; there is no maximum alcohol level. As for *Deutscher Wein* and *Landwein*, enrichment is permitted for Qualitätswein.

The majority of everyday drinking and high volume wines come under this category, although there are also some high-quality examples as an increasing number of producers are following the VDP's lead (see below) and labelling their dry wines as *Qualitätswein trocken*, and only using *Prädikatswein* for sweeter wines.

Wines at *Qualitätswein* level and above must undergo laboratory analysis and a blind tasting prior to release. Those that pass are given an 'AP' (*Amtliche Prüfungsnummer*) number, which must appear on the label. This 10 to 12 digit number indicates where and when the wine was tested, the location of the vineyard and the bottler's specific lot number (unique for each bottling).

PRÄDIKATSWEIN

Similar to *Qualitätswein, Prädikatswein* is a PDO category, but with more stringent regulations.[11] The grapes must come exclusively from a *Bereich* (one of 40 recognised wine-producing districts, smaller than *Anbaugebieten*), the name of which need not, and increasingly does not, appear on the label (the name of the *Anbaugebiete* must, however, be stated). These are wines produced from grapes with the highest must weights and enrichment is not permitted at this level.

Prädikatswein can be produced from any grape variety although it is particularly associated with Riesling. The amount produced each year depends on the vintage. On average, *Prädikatswein* production is about half that of *Qualitätswein*, but in the best vintages the amounts produced can be around the same.

Prädikat means 'distinction' and there are six levels, which are defined by minimum must weight. In increasing order of must weight, these are:

Kabinett

As they are produced from the grapes with the lowest must weights for *Prädikatswein*, *Kabinett* wines are the lightest in body and highest in acid. They can be dry to medium-sweet in style: those with residual sugar can have alcohol levels as low as 7% abv (the legal minimum) but dry wines can reach 12% abv. *Kabinett* Riesling is light-bodied, has high acidity and aromas of green and citrus fruit.

Spätlese

Spätlese (literally 'late picked') is produced from fully ripened grapes, which are usually picked about two weeks later than those destined for *Kabinett* wines. Compared to *Kabinett*, these wines have a greater concentration of riper fruit flavours (typically stone fruits for Riesling), slightly higher alcohol levels (at a comparable level of residual sugar) and a fuller body.

Spätlese wines can also range from dry to medium-sweet the minimum alcohol level must be 7% abv.

Single vineyard wine label

Auslese

Auslese (literally 'selected harvest') is made from specially-selected, extra-ripe bunches of grapes. Although bunches should be carefully selected, hand-harvesting is not compulsory and some producers harvest mechanically before sorting by hand when they reach the winery.

Auslese wines have even riper and concentrated flavours than *Spätlese*. The wines often have honey characteristics and some of the grapes may have been affected by botrytis which will give added complexity of flavour.

Auslese is the last category at which wines can be dry, although many of the best are sweeter in style, with a balance of sweetness and acidity that gives them potential for long bottle-ageing. For the sweeter wines, alcohol levels can again be as low as 7% abv (the legal minimum).

Because the range of must weights covered by this category is particularly wide, some producers use additional labelling terms, not defined by law, to indicate sweetness levels (see below).

Beerenauslese

Beerenauslese (often shortened to BA, literally 'selected berries') is made from individually selected berries and must therefore be harvested by hand. At must weights this high, the wine will always be sweet and fermentation can be long and slow, reaching only relatively low levels of alcohol (for this reason, the minimum alcohol level for this category and that of *Eiswein* and *Trockenbeerenauslese* is 5.5% abv). The berries need not be botrytized but it is a typical feature of these wines. With Riesling, the typical flavours are of very ripe and dried stone fruit.

BA wines are only produced in years with suitable conditions for noble rot to form (brief periods of humidity, followed by dry, sunny weather) and in very small quantities. Yields are very low and the wines are very labour-intensive to produce. The wines are therefore rare and very expensive.

Eiswein

German ice wine was given its own *Prädikat* category in 1982. Minimum must weights are the same as for BA but the grapes must be picked when they are frozen, at temperatures below –7°C (19°F).[12] The harvest can take place any time from December (or occasionally November) to February of the following year (the vintage is given as the year in which the harvest started). Once picked, the grapes must also be pressed whilst still frozen – artificial freezing of the grapes is not permitted.

Pressing releases small quantities of naturally concentrated juice with very high levels of sugar and acid. The grapes used must be very healthy: the unpleasant flavours of any rot

would be amplified along with the other flavours. Growers waiting for their grapes to freeze regularly lose some, and sometimes all, of their crop either to disease or to predators. Some growers are improving their chances of producing it by covering their grapes in plastic sheeting to protect them until they freeze.

Riesling *Eiswein* tend to have high acidity and concentrated, pure peach and grapefruit flavours. Because only very small amounts are produced, *Eiswein* is rare and sells at premium prices.

For more on the production of ice wine, see the chapter on Specific Options for Producing Wines with Residual Sugar in D1: Wine Production.

Trockenbeerenauslese

The extremely high must weights required for *Trockenbeerenauslese* (often shortened to TBA, literally 'selected dried berries') means that the grapes must have been affected by botrytis. The shrivelled, raisin-like grapes produce tiny amounts of highly concentrated, extremely sweet wines.

However, the sweetness is still balanced by high acidity and this can help the wines age elegantly for a very long time. The high must weights mean fermentation is long and slow and rarely continues beyond 8% abv.

Yields are extremely low and so TBA wines are only made in tiny quantities (rarely more than around 100 bottles at a time) and only in suitable years. TBA wines tend to be the most expensive wines produced in Germany.

TERMS INDICATING SWEETNESS

Below *Beerenauslese* level, wines can be produced at all sweetness levels, meaning consumers cannot easily tell how dry or sweet an *Auslese*, *Spätlese, Kabinett* or *Qualitätswein* may be.

Many producers therefore use the EU labelling terms for sweetness – the German equivalents are as follows:

- *trocken* (‘dry’) – wines with no more than 4g/l residual sugar (or up to 9 g/l where residual sugar does not exceed total acidity by more than 2g/l, as is usually the case with Riesling)
- *halbtrocken* (‘off-dry’) – wines with between 4 and 12 g/l of residual sugar (or up to 18 g/l where residual sugar does not exceed total acidity by more than 10g/l)
- *lieblich* (’medium / medium-sweet’) – wines with between 12 and 45g/l of residual sugar
- *süss* (’sweet’) – wines with more than 45g/l of residual sugar.

These definitions are based on the level of residual sugar and do not necessarily correspond to how dry or sweet the wine tastes. A high-acid Riesling will likely taste drier than a medium-acidity Müller-Thurgau with the same amount of residual sugar.

The proportion of *trocken* wines varies considerably between regions, with a higher proportion usually being produced in warmer regions where ripeness of fruit can balance acidity without the need for sugar (especially for the high acid Riesling grape). For example, in 2021, *trocken* wines accounted for just under 50 per cent, but in Baden it represented 64 per cent and in Mosel just 26 per cent.[13]

Wines labelled as *halbtrocken* have been falling in popularity in recent years as consumers increasingly turn to drier styles of wine. Because of the potentially negative connotations, those producers who still produce wines that could be labelled as *halbtrocken* now either make no reference to sweetness on the label or use the term *feinherb*. A term with less obvious connotations (literal translation is 'fine dry') and not defined by law, *feinherb* is used for wines which fall within the legal definition of *halbtrocken* but also extends to those with slightly higher levels of residual sugar.

Because the band of permitted must weights is relatively wide, especially for *Auslese*, some producers have adopted other, unofficial, methods of indicating wines produced from grapes with higher must weights and which therefore have riper, more concentrated flavours. They are most common in the Mosel where many producers are making wines at a range of sweetness levels. One of these is the *Goldkapsel* (or 'gold capsule') which designates wines that are characterised by botrytis; in some cases, shorter capsules indicate wines with higher levels of concentration than the average *Auslese* and longer capsules a further level above that.

GEOGRAPHICAL LABELLING TERMS

Under the 1971 wine laws, the precise boundaries of all German vineyards were established and registered. A number of *Bereiche* (wine-producing districts) were identified and within them individual vineyard sites (*Einzellagen*) and collective vineyard sites (*Grosslagen*).

Currently, there are 2,658 registered *Einzellagen*. They range in size from less than 1ha to over 200 ha.[14] Most are split between a number of different owners.

Grosslagen are much bigger, ranging in size from 600 to 1,800 ha, usually comprising several *Einzellagen.* Currently, 167 have been registered.[15] Note that *Grosslage* is very different from *Grosse Lage*, one of the top vineyards in the VDP classification (see Wine Law and Regulations).

Einzellage and *Grosslage* names may only be used on *Qualitätswein* and *Prädikatswein* labels. They must usually be preceded by name of the village where the vineyard(s) are located (e.g. a wine made from grapes grown in the Goldtröpfchen vineyard in the village of Piesport would be labelled *Piesporter Goldtröpfchen*) unless the name of the property is so well known that it is officially permitted not to (e.g. *Schloss Johannisberg* and *Schloss Vollrads*). However, this makes it difficult for consumers to know what the quality level of a particular wine will be. For example, in Piesport, *Piesporter Goldtröpfchen* is an *Einzellage* producing some of the finest Mosel Rieslings, whereas *Piesporter Michelsberg* is a *Grosslage* producing largely inexpensive, lower-quality wines. (The 'er' at the end of Piesport (or any village) conveys that the vineyard belongs to the village.)

To confuse matters further, in the state of Rheinland-Pfalz (which includes Ahr, Mosel, Nahe, Pfalz and Rheinhessen), the names of individual plots within a vineyard site may now also be registered and added to the name of the *Bereich*.

OTHER LABELLING TERMS

One other legally defined term of note is *Liebfraumilch*, once the mainstay of German wine exports, although sales have declined sharply since the 1980s. It is a medium-dry white wine of *Qualitätswein* level with at least 18g/l residual sugar. It must contain at least 70 per cent Riesling, Silvaner, Müller-Thurgau and Kerner although, in practice, Müller-Thurgau tends to dominate the blend. The grapes must come from one of four regions. The majority of wines came from Rheinhessen and Pfalz although some were produced in Rheingau and Nahe.

A number of other style-based labelling terms have been introduced over the years but use of these terms has been limited.

VERBAND DEUTSCHER PRÄDIKATSWEINGÜTER (VDP)

Given the issues surrounding the *Einzellage/Grosslage* system, there have been calls to create a quality hierarchy of vineyard sites. Various producers' groups and associations have been established with the aim of creating their own vineyard or wine classification, and as part of this stipulating more stringent rules for wine production. Of these groups, by far the best-known and most influential is the VDP.

Founded in 1910, the VDP (initially under a different name) was originally a group of producers from Rheingau, Rheinhessen, Pfalz and Mosel who wanted to promote wines made without must enrichment, at the time called *Naturweine*. However, in the late 1960s, the name and concept of *Naturwein* was rejected from German wine law, and in the 1971, the concept of *Prädikatswein* was introduced. In response, the VDP renamed itself and set up a new statute of higher standards for their members. Today, the VDP has around 200 members across all of Germany's main wine-producing regions, split into a number of regional associations. Members can be identified by the VDP logo (an eagle bearing a bunch of grapes) which must appear on their wine capsules.

VDP members own about 5 per cent of Germany's total vineyard area and produce about 3 per cent of annual production by volume and 7.5 per cent by value. Riesling is the most planted variety amongst VDP members, accounting for over half of their vineyards. In 2020, 17 per cent of the wine was exported.[16]

The VDP has established stricter regulations regarding grape growing and winemaking than those imposed by the German wine laws, including much lower maximum yields, higher minimum must weights and growing predominantly the traditional grape varieties for their particular region. Members agree to abide by these regulations and are audited every five years

Wine capsules printed with the VDP logo

– those who are found not to comply may be excluded. The VDP also encourages sustainable viticulture; over one fifth of Germany's certified organic producers are VDP members.

Much of the production is of dry wines, both white and red, although wines with residual sugar account for a significant proportion of VDP wine in the Mosel. Even though minimum must weights are above those required by law (often significantly so), these dry wines must be labelled *Qualitätswein trocken*. *Prädikat* levels are to be used only for wines with residual sweetness.

Another fundamental principle of the VDP is to emphasise the provenance of wines. It has therefore established a four-tier vineyard classification system, refined in 2012. It applies only to VDP members and does not form part of the German wine laws. The VDP is lobbying to have its labelling terms protected under German wine law.

The four categories of VDP wine are:

VDP Gutswein
These are regional wines, similar in style to generic or regional wines in Burgundy, which originate from a member's holdings within a particular region. They must meet the general standards prescribed by the VDP. The maximum permitted yield is 75hL/ha.

VDP Ortswein
The equivalent of village wines in Burgundy, these are produced from grape varieties that are typical of their region. The maximum permitted yield is again 75hL/ha.

VDP Erste Lage
This designates 'first-class' vineyards with distinctive characteristics and is the equivalent to Burgundy *premier cru*. These are excellent quality wines with ageing potential. More stringent grape growing and winemaking regulations apply. Only grape varieties which the local association has deemed to be best suited to a particular site or parcel may be used. The maximum permitted yield is lower (60hL/ha). Grapes must be harvested by hand and must be at least ripe enough to qualify for *Spätlese* status. Wines must be produced using 'traditional winemaking techniques'. The village and the vineyard name must appear on the label.

VDP Grosse Lage
The equivalent to Burgundy *grand cru*, these have been determined to be the best parcels in the best vineyards. The parcels have been narrowly demarcated by the local associations as those whose qualities are discernible in the finished wine. These wines should be outstanding quality and have long ageing potential.

Even stricter rules apply: maximum yields are lower than for *Erste Lage* wines (50hL/ha) and the choice of grape varieties is more restricted. Permitted grape varieties differ according to the *Anbaugebiete*. For *Grosse Lage*, Riesling is allowed in all *Anbaugebieten* (though only for botrytised wines in Ahr) and Spätburgunder in all *Anbaugebieten* but Mosel and Nahe. Various other grapes may be permitted according to the *Anbaugebiete*.

Dry white wines cannot be released until 1st September in the year following the harvest. Red wines must spend at least 12 months ageing in oak and cannot be released until 1st September in the year after that. Sweeter *Prädikat* wines may be released on 1st May following the harvest.

Dry wines made from grapes from *Grosse Lage* are designated *Grosses Gewächs*. The term *Grosses Gewächs* cannot appear on the label; instead the VDP '*GG*' trademark is used. Only the vineyard name appears on the label and not the village (similar to *grands crus* in Burgundy).

THE RHEINGAU CHARTA

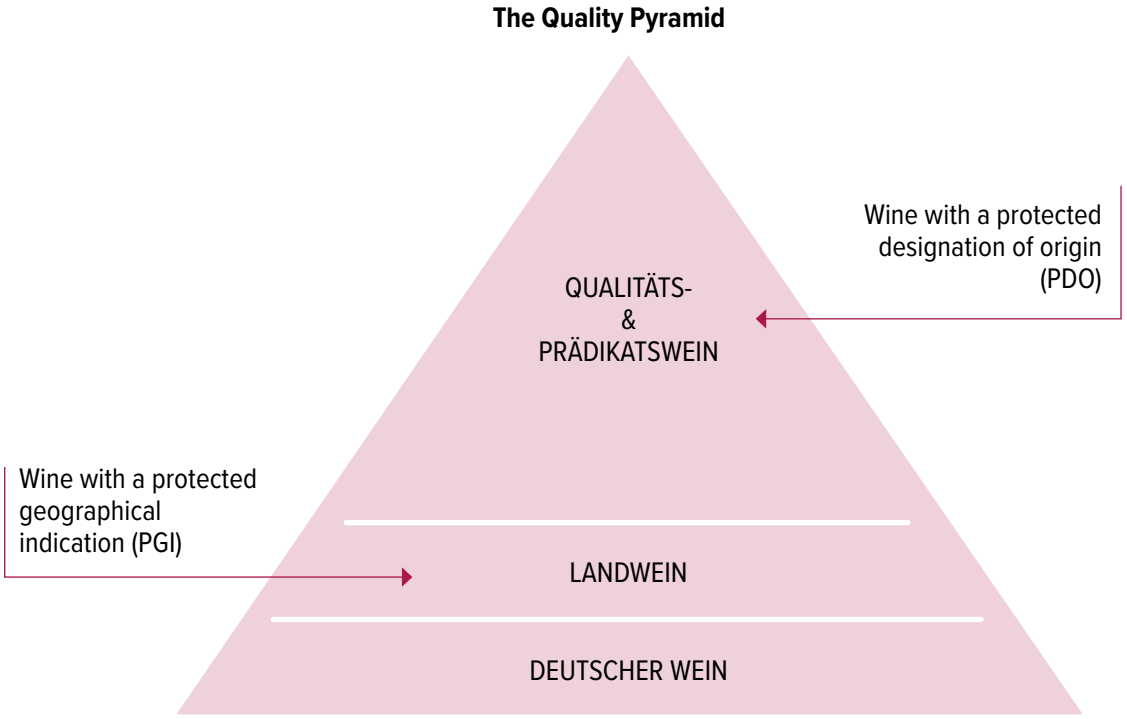
The Rheingau Charta (pronounced 'Carter') was introduced in 1984 to promote dry wines from the best vineyard sites of the Rheingau. The term *Erstes Gewächs* was introduced for the best sites in Rheingau and is now a legally-protected term for wines from these sites. To use this term on the label, wines must be produced exclusively from Riesling or Spätburgunder; grapes must be hand-harvested from lower-yielding vineyards and the wines must be dry with a minimum must weight equivalent to *Spätlese*.

In 1999 the members of the Charta joined the VDP in Rheingau. These members, who previously used *Erstes Gewächs,* can now label those wines as 'GG' (*Grosses Gewächs*).

REVISED GERMAN WINE CLASSIFICATION OF 2021

In January 2021, German wine law was revised. However, there is a transitional period for producers in which some categories can continue to use the old system, described in the main text, until 2025.

The overall categories remain the same: *Deutscher Wein*, *Landwein*, *Qualitätswein* and *Prädikatswein*.



Deutscher Wein is wine without a geographic designation, the German term for the basic 'wine' category in EU legislation. The label may state the vintage and grape variety.

Landwein = PGI, wine from one of Germany's 26 defined Landwein areas, e.g. Rheingauer Landwein. The label may state the name of the *Landwein* regions where the grapes were grown but may not state a village or vineyard name.

Qualitätswein = PDO, and therefore must come from a defined origin. The minimum must weight ranges between 50°–72° Oechsle depending on the origin. The wine may be enriched within stated limits.

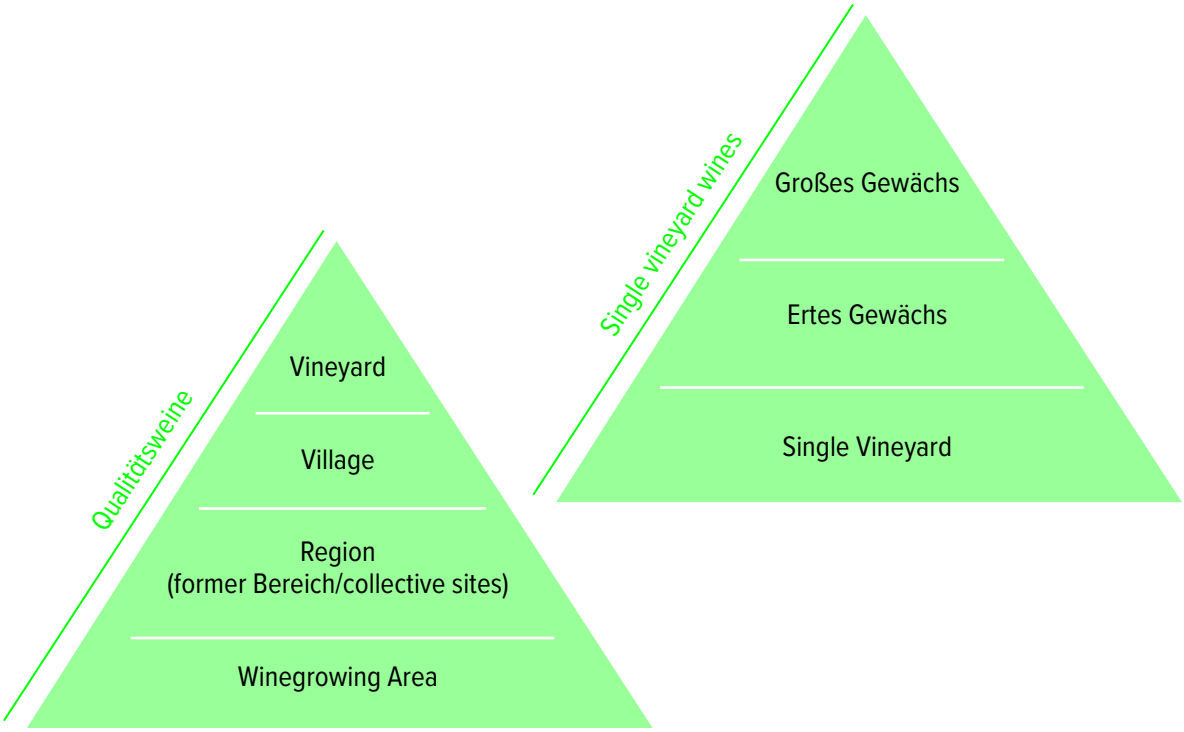
Prädikatswein is a category within Qualitätswein with, in most cases, higher must weight requirements, 70°–154° Oechsle. Enrichment is not allowed.

Qualitätswein accounts for well over 90 percent of German wine production. The tiers of the Prädikatswein system are as before and are based on must weight in combination with an approved variety with the requirements varying from region to region.

Prädikatswein (with increasing must weight requirement):

- Kabinett
- Spätlese
- Auslese
- Beerenauslese
- Eiswein (has to have the same minimum must weight as Beerenauslese)
- Trockenbeerenauslese

The new element in the law of 2021 is a geographic hierarchy for Qualitätswein. It is based on the principle that the smaller the unit of origin, the higher the quality of the wine.



In each case the grapes must be grown within the defined area of origin. To start from the pyramid on the left and from the bottom of the diagram[17]:

Anbaugebiet – wine growing area, the lowest level tier of Qualitätswein. The grapes must be grown in one of 13 German wine regions (Mosel, Rheingau, etc.).

Region – The region category replaces both *Bereich* and *Grosslage* of the former regulations. The label must state 'region' on the label.

Ortwein – village wine. The label must bear the name of the village.

Einzellage – single vineyard. The wine can be dry or sweet. It must be made from one or more recommended grape varieties and be of *Kabinett* quality (i.e. meet the minimum must weight for *Kabinett* within its region).

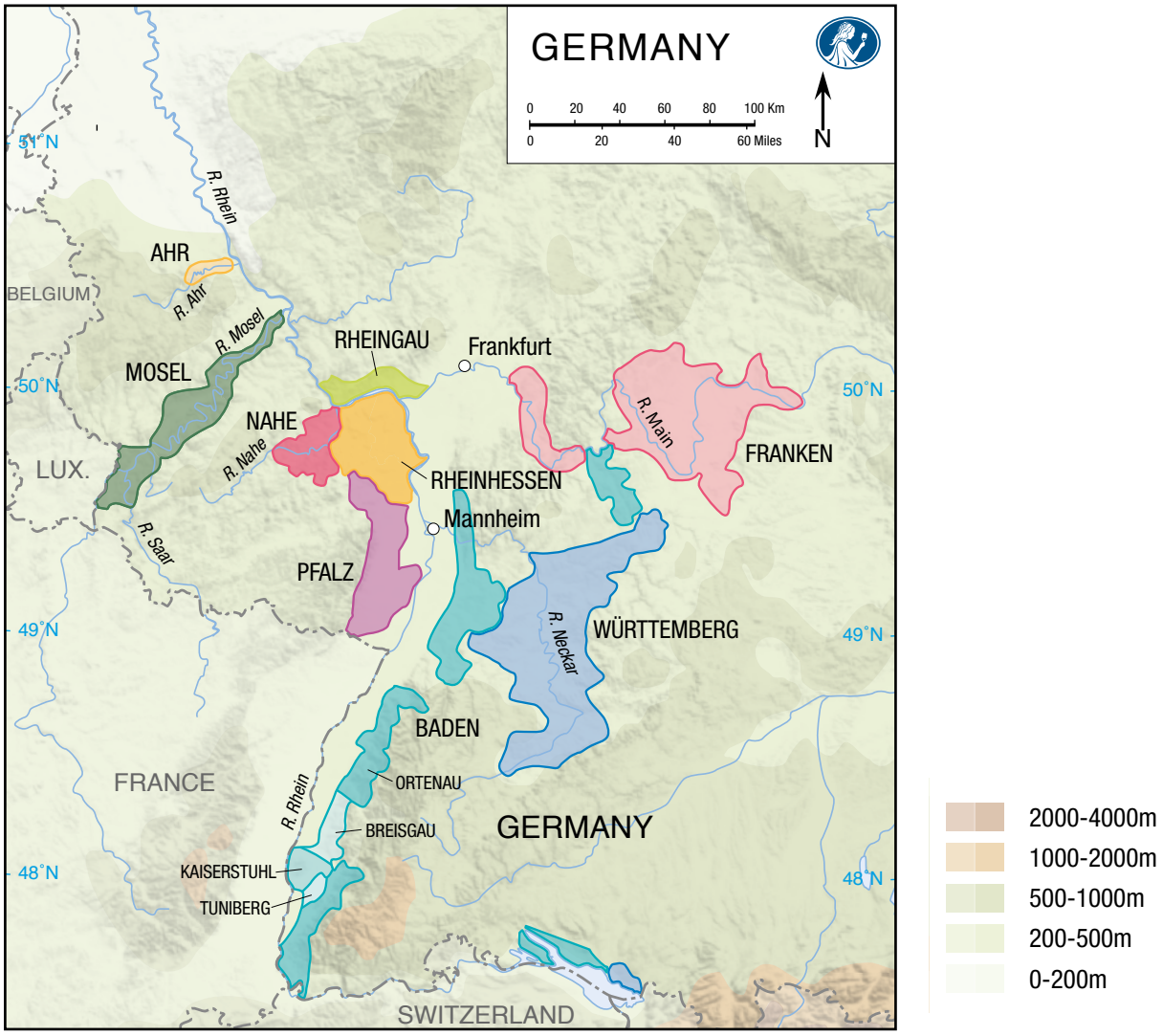
There are two further categories within the single vineyard category, *Erstes Gewächs* (first growth) and *Grosses Gewächs* (great growth). These categories have further requirements:

Erstes Gewächs	Grosses Gewächs
The grapes must come from single vineyard or smaller parcel within a classified site.	
The wines must be made from a single grape variety (minimum 85% and only recommended varieties approved within the region of origin).	
The grapes must be picked selectively (i.e. can be harvested by any means but must be subject to selection).	The grapes must be handpicked.
Yields are limited to a maximum of 60 hL/ha or 70 hL/ha on steep slopes with a minimum natural alcohol of 11 per cent.	Yields are limited to a maximum yield of 50 hL/ha with a minimum natural alcohol content of 12 per cent.
The wines must be dry (i.e. within rules for *Trocken*).	
The wines have to pass a sensory test by a tasting commission if ordered by the regional bodies	The wines have to pass a sensory test by a tasting commission.
The wines are subject to specified release dates (1 March of the following year).	The wines are subject to specified release dates. (1 September of the following year for white wines and 1 June of the next year for red wines)
For both these top categories, it is possible to indicate a smaller parcel, known as a **Gewann**, as long as it entered into the vineyard register.	

11.4. Principal Wine Regions

The principal wine-producing regions in Germany (*Anbaugebiete*) are discussed below in order of size of production. The five highest-producing regions – Rheinhessen, Pfalz, Baden, Württemberg and Mosel – produce 88 per cent of Germany's wine).[18] Although the vast majority of German wine production is concentrated in the southern and south-western parts

of the country, there are two small wine areas, Saale-Unstrut and Sachsen, in the east of Germany, that predominantly produce white wines from Müller Thurgau, Weissburgunder and Riesling.



RHEINHESSEN

Rheinhessen is home to just under a quarter of German vineyards. It is also the largest in terms of production and yields are amongst the highest in Germany. It is a relatively warm and dry region, sheltered by various mountain ranges including the Hunsrück and Taunus. The majority of its vineyards are planted on the warm, fertile valley floors which are ideal for the production of high volume, inexpensive wines: *Liebfraumilch* originated from Worms in the southern Rheinhessen.

White grapes dominate in Rheinhessen with 73 per cent of plantings. Riesling is the most planted variety, just ahead of Müller-Thurgau, which, along with the other German crosses, is mainly used in inexpensive blends. There are also sizeable plantings of Silvaner, Grauburgunder and Weissburgunder. Dornfelder is the leading black variety, covering over double the vineyard area of Spätburgunder.

Bulk production still dominates – and plantings are still on the rise to supply it. The majority of this production is under the control of merchant houses. Quality wine production is dominated by small estates and a number of co-operatives.

However, a number of areas are establishing a reputation for producing high-quality wines. The longest-established is the Rheinterrasse, a stretch of steeply-sloping vineyards on the west bank of the river around Nierstein and Oppenheim. The east-facing aspect of these vineyards mean they receive the warming morning sun in the coolest part of the day, enhancing ripeness. Proximity to the Rhine and its moderating influence also means that evening and autumn temperatures remain warmer than in vineyard areas away from the river, extending the ripening period. As a result, Rieslings from this area often show ripe lemon and peach flavours. Within the Rheinterrasse, the vineyards within the strip known as Roter Hang around Nierstein and neighbouring Nackenheim are particularly reputed. The Roter Hang is distinguished by its *Rotliegenden* soil, an iron-rich red soil consisting of slate, clay and sandstone. Rieslings from the Roter Hang are said to show smoky characteristics.

Vineyards in the Wonnegau area in south Rheinhessen are also now gaining a reputation for high-quality Riesling and Spätburgunder. These vineyards also benefit from the moderating influence of the Rhine. Significant producers include Weingut Gunderloch on the Rheinterrasse and Weingut Keller closer to Worms.

Vineyard, Rheinhessen

PFALZ

A narrow strip of vineyards squeezed between the Haardt Mountains to the west and the Rhine plain to the east: unusually for Germany, the vineyards of Pfalz are not centred along a river valley. The region runs north from Alsace: the Haardt are a continuation of the Vosges and produce a similar rain shadow effect, making Pfalz one of the driest German wine-producing region and one where drought can be a concern.

The area under vine is only slightly smaller than Rheinhessen and production is not far behind. Again, white grape varieties dominate with 67 per cent of plantings, Riesling accounts for around a quarter of total plantings, followed by Müller-Thurgau, Grauburgunder and Weissburgunder. Due to the warmer temperatures, Pfalz wines tend to be slightly fuller-bodied with riper fruit flavours than those from Rheinhessen. The climate also suggests considerable potential for red wine production: currently, Dornfelder is the most planted black variety, and second overall, but there are also significant plantings of Spätburgunder.

The most renowned vineyards are in an area known as the *Mittelhaardt* around Bad Dürkheim, Wachenheim, Forst, Deidesheim and Ruppertsberg in the northern part of Pfalz. The south- or east-facing steeply-sloping vineyards in the foothills of the Haardt gain maximum sunshine and are protected from winds, contributing to the production of ripe, full-bodied Riesling. There is a wide variety of soils, including limestone, sandstone, basalt and clay, which producers are exploiting to give wines of differing characteristics and flavours.

Further south, the *Südliche Weinstrasse,* with its more fertile sandstone soils, was traditionally an area for inexpensive wine production. However, in recent years, a new generation of winemakers has led to an increase in quality in the wines from this area, particularly for Spätburgunder, Grauburgunder and Weissburgunder. Like Alsace, this southern

part of the Pfalz has experienced periods of both French and German rule, and is one reason, alongside suitable climatic factors, that Pinot grapes continue to be common in the area.

As in Rheinhessen, high-volume production is dominated by merchant houses, whilst higher quality wines tend to come from small estates and a number of quality-focused co-operatives. Significant producers include Dr. Bürklin-Wolf and the co-operative Winzerverein Deidesheim.

BADEN

The wine region of Baden is split into multiple distinct areas (*Bereiche*). The main vineyard area stretches from just north of Heidelberg to the Swiss border in the south. There are also vineyards between Franken and Württemberg, and around the east of the Bodensee (Lake Constance).

The main vineyard area is situated on the eastern side of the Rhine opposite Alsace and also benefits from the rain shadow of the Vosges. This, coupled with its relatively southerly latitude, overall makes Baden Germany's warmest, sunniest and and one of the driest wine-producing regions.

Baden is best known for its red wines. Spätburgunder is the most planted variety and those produced in Baden are amongst Germany's best with complex flavours, often enhanced by oak ageing. They come in a variety of styles thanks to Baden's varied soils and microclimates. The steep, south-facing slopes around Kaiserstuhl, an extinct volcano, produce the fullest-bodied wines with high alcohol and complex, smoky ripe fruit flavours. In cooler areas, such as the *Bereich* of Ortenau, and on the significant pockets of calcareous soil, such as around the *Bereiche* of Tuniberg and Breisgau, the wines have more acidity and more delicate fruit flavours.

Despite its reputation for red wine, 61 per cent of Baden's plantings are white. The warm, dry conditions make Baden ideal for the production of high volume, inexpensive blends and Müller-Thurgau is the second most planted variety. However, Baden has also been developing a reputation for very good Grauburgunder, Weissburgunder and Chardonnay, often matured in oak. Riesling only takes up a relatively small area in Baden but some high-quality, fuller-bodied examples are produced at all *Prädikat* levels.

Whilst there are many small estates (for example, Bernhard Huber), co-operatives are responsible for around 75 per cent of Baden's production, led by the *Badischer Winzerkeller* located in Breisach and one of the largest in Germany.

WÜRTTEMBERG

Located around Stuttgart, to the east of Baden and south of Franken, Württemberg currently produces mainly light, fruity red wines which are mostly consumed on the domestic market. The vast majority of production comes from the central co-operative, Möglingen. However, this is starting to change as a number of smaller estates are gaining a reputation for producing very good quality wines, especially on the steep, terraced vineyards above the river Neckar and tributaries.

The warm summer temperatures are ideal for red wine production and 66 per cent of plantings are black grape varieties. However, whilst Spätburgunder is increasingly important, the most planted black varieties are Trollinger, Lemberger and Schwarzriesling, giving producers a potential point of difference on export markets. As well as the traditional light and fruity style, fuller- bodied examples with riper fruit flavours, higher alcohol are increasingly

being produced particularly from Lemberger, often with oak ageing. Riesling accounts for over half of all white plantings. Significant producers in Württemberg include Rainer Schnaitmann and the large co-operative Württembergische Weingärtner.

MOSEL

One of Germany's best-known wine regions, Mosel is famous for producing some of the world's greatest Rieslings. Whites make up 91 per cent of plantings and Riesling 62 per cent on its own.

It is one of the most northerly wine-producing regions in Germany and site selection is essential to ensure grapes can ripen. The best vineyards are on the steep, south-facing slopes overlooking the Mosel which enjoy the best sun exposure and, to a much smaller extent, sunshine reflected from the river. The dark-coloured slate soil also plays an important part in radiating heat.

The Mosel is generally split into three sections: the Upper Mosel, Middle Mosel and Lower Mosel. The Middle Mosel is the largest and is home to the majority of the best vineyards. Vineyards particularly famous for their quality include (village mentioned first, then vineyards in brackets): Brauneberg (Juffer, Juffer-Sonnenuhr), Erden (Treppchen, Prälat), Graach (Himmelreich, Domprobst), Ürzig (Würzgarten), Wehlen (Sonnenuhr), Bernkastel (Doctor) and Piesport (Goldtröpfchen). (Note, on a wine label the *Einzellage* name would be presented as, for example, Bernkasteler Doctor.)

Mosel Rieslings are paler in colour, lighter in body, with lower alcohol and higher acidity than those from elsewhere and have pronounced floral and green fruit aromas. The balance of acidity and flavour intensity gives these wines potential for long bottle ageing. Whilst drier wines are now increasingly produced, Mosel has a strong reputation for producing sweeter styles of wine in the *Kabinett*, *Spätlese* and *Auslese* categories and also for sweet Rieslings. The winters are almost always cold enough to produce *Eiswein*.

Steep vineyard on the Mosel

Flat vineyard on the Mosel

The slate soils come in a variety of colours – grey, blue, brown and red – and producers are increasingly interested in how subtle differences can influence the characteristics and aromas of their wines.

The topography of the steepest sites means that working the vineyards is expensive and labour intensive. The low yields required to make the sweetest wines such as BA and TBA also impact on cost of production. These costs, alongside the quality of many Mosel Rieslings, means that wine prices are amongst the most expensive in Germany. However, there are flatter sites, for example around Piesport, which are used for producing less complex, inexpensive wines, particularly from Müller-Thurgau, much of it bottled by the region's merchant houses.

About 20 per cent of the region's wine is produced by the *Moselland* co-operative in Bernkastel, making it the world's largest producer of Riesling.[19] The Mosel is home both to small producers (for example, among many others, Egon Müller and Markus Molitor) and to major wine companies such as F.W. Langguth who source wine for the large Erben and Blue Nun brands (among its other brands) from other parts of Germany and other countries.

The region also covers the valleys of the rivers Saar and Ruwer, both tributaries of the Mosel. The best vineyards are located in the sheltered side valleys of these rivers, with south, south-east and south-west aspects. Due to the slightly higher altitude of the vineyards, temperatures are a little lower in the Saar and Ruwer than in the Middle Mosel and acidity levels in the wines can be even higher. There are a number of highly reputed vineyards in these relatively small areas, the most famous of which is Scharzhofberg in Saar.

FRANKEN

The vineyards of Franken create a W-shaped course along the south-facing slopes of the river Main and its tributaries. Being further east, Franken has the most continental climate of Germany's principal wine region, meaning warmer summers but a shorter growing season with cooler autumns and harsh winters. Spring frosts are a particular hazard.

White grapes account for 82 per cent of plantings and the production of drier styles is a more long-standing tradition than elsewhere. The most planted variety is Müller-Thurgau, whereas Riesling makes up a relatively small proportion of plantings.

However, it is the second most planted variety, Silvaner, which produces some of the region's best and most distinctive wines (although plantings have fallen considerably in the last 30 years). Silvaner is an early-budding and early ripening variety, meaning it can reach full ripeness before temperatures fall in the autumn. This also makes it susceptible to spring frost but, due to its historical significance in the region, Silvaner tends to get the best sites, which are less frost prone. Very good Silvaner wines are produced on south and south-east facing slopes of chalky soils around the town of Würzburg, giving full-bodied dry wines with floral and wet stone aromas.

To the west of the region, steep terraces of sandstone produce some very good Spätburgunder, amongst the most well-renowned producer is Weingut Rudolf Fürst.

Many Franken wines are bottled in the traditional *Bocksbeutel*, a flat, round-shaped bottle with a short neck. Much of Franken's production is consumed locally but its distinctive wines are starting to gain recognition on export markets. There are a number of high-quality estates, including Horst Sauer and a few owned by charitable institutions, such as Bürgerspital and Juliusspital.

NAHE

Situated between Mosel and Rheinhessen, Nahe consists of a relatively small number of vineyards, mainly small estates, scattered over a relatively large area. This results in a wide variety of soils and growing conditions, although the region as a whole is protected by the Hunsrück Mountains, resulting in mild temperatures and low rainfall.

This is predominantly a white wine region: white varieties account for 77 per cent of all plantings with Riesling leading the way at 29 per cent. As it is slightly warmer, Nahe Rieslings have slightly lower levels of acidity but riper fruit flavours and more body than those from Mosel, though less so than those from Rheingau and Rheinhessen.

The vineyards in the east of region, particularly those on the south-facing banks of the Nahe between Schlossböckelheim and Bad Kreuznach have some of the warmest conditions, benefitting from the moderating influences of the Rhine and Nahe rivers, and gaining maximum sunlight. In this strip, the slopes can be as steep as in Mosel. The soils are a mixture of slate and sandstone. Cooler conditions can be found to the west of the region, where harvesting can be a couple of weeks later. Significant producers include Weingut Dönnhof and Emrich-Schönleber.

Where the slopes are gentle, the soil is deeper and more fertile. As well as producing some inexpensive wines from Müller-Thurgau, the region's second most planted variety, these sites also produce some good and very good quality wines from Grauburgunder and Weissburgunder.

Dornfelder is the most planted red variety, ahead of Spätburgunder, but black varieties only make up just under a quarter of plantings.

RHEINGAU

Rheingau is a small but highly prestigious region producing some of Germany's highest quality and most ageworthy Rieslings. It covers a stretch of the Rhine from Wiesbaden to Lorchhausen as well as a short section of the river Main around Hochheim. Across the river from Rheinhessen, it is also protected from cold, northerly winds by the western end of the Taunus Mountains, which, along with the south-facing aspect of its vineyards, means that Rieslings here can be fuller-bodied, with riper fruit characteristics than those of the Mosel. The Rhine is also much wider here – about 1 km (0.6 mile) across. It has a moderating influence on temperatures reducing frost risk. It also increases humidity providing conditions that are perfect for the development of botrytis in the autumn.

In Rheingau, the focus is primarily on quality. Yields are lower than average for Germany. The best vineyards are situated on steep slopes around Rüdesheim, Geisenheim (home of the famous research institute), Johannisberg, Hattenheim and Erbach. Sites on the mid-slope are thought to be subject to the best conditions, at least for dry wines; receiving some moderating influence from the river, but far enough away to avoid much of the humidity that can lead to fungal diseases. Soils range from sand, loam and loess around Hochheim in the east, to sandstone and slate further west.

White wines dominate, accounting for 86 per cent of plantings, with Riesling being especially dominant here (making up 77 per cent alone). The majority of these wines are made in a dry style (indeed the country-wide trend for producing drier styles of wines arguably started in the Rheingau): however, Rheingau is also reputed for its botrytised sweet wines.

At the western end, around Assmannshausen, where the river turns to head north again, Spätburgunder is the key grape. The steep south and south-west facing Höllenberg vineyard is renowned for producing relatively full-bodied Pinot Noirs of very good to outstanding quality.

Rheingau was once the home of the German aristocracy, and 'Schloss' found in many of the winery names denotes a castle or manor house. Production comes mainly from estates

Vineyard, Rheingau

and Rheingau is home to some of Germany's most famous, such as Schloss Johannisberg, Schloss Vollrads and the large, state-owned Hessische Staatsweingüter Kloster Eberbach. Co-operatives are less influential here than elsewhere.

AHR

Ahr is one of Germany's smallest wine-producing regions with only 560 hectares under vine. It is also one of the most northerly: yet black grape varieties dominate, with 81 per cent of plantings. This is made possible because the river Ahr cuts a narrow, sheltered valley with steep, south-facing slopes and the soil is dominated by heat-retaining dark slate and greywacke (a dark sandstone).

Traditionally, black grapes were late harvested in Ahr and were produced with residual sweetness. However, the region is now a source of very good Spätburgunder, fermented to dryness with relatively high tannins and spice notes from oak ageing.

Wines from small estates are increasingly making their way on to the export market, although co-operatives still produce around three-quarters of Ahr wine. The Mayschoss co-operative was formed in 1868 and is thought to be the oldest co-operative in the world.

Significant producers include the cooperative Winzergenossenschaft Mayschoss-Altenahr and Jean Stodden.

11.5. Wine Business

In 2020, Germany had just over 16,000 wine businesses, with 53 per cent owning vineyards of 3 ha or less.[20] However, the number of businesses has fallen by 20 per cent since 2010, despite a very slight increase in the area under vine. Where plantings have increased, this is on flatter land for bulk wine production.

For vineyards on the steeper slopes in particular, the high cost of labour and low yields, particularly for sweeter wines, coupled with vintage variation result in high production costs. Although such wines often command higher prices, for some growers the cost of farming the land is unsustainable against the prices customers are prepared to pay, hence the reduction in the number of growers in recent years.

Germany's best wines are mainly produced by wine estates which grow and vinify their own grapes. Some were established many centuries ago by the Church (e.g. Schloss Johannisberg and Kloster Eberbach), aristocratic families (e.g. Schloss Vollrads) and charitable organisations (e.g. Bürgerspital and Juliusspital). However, there has also recently been an emergence of estates run by a new breed of highly-skilled and knowledgeable winemakers. The German Wine Institute initiated Generation Riesling in 2005 to give young winemakers (under 35 years of age) in Germany a national and international promotional platform.

Many growers, however, sell their grapes to merchant houses (*Weinkellerei*) which are one of the main sources of the higher-volume wines, or process them through a co-operative. (There are numerous German words for 'co-operative': *Winzergenossenschaft, Winzerverein, Winzervereinigung, Weingärtnergenossenschaft*, and *Weinbauernverband*. Most of the *Anbaugebiete* also have a central co-operative cellar or *Zentralkellerei.)* Germany was one of the first wine-producing countries to establish co-operatives and, although the number has been falling slightly, they remain a very important part of the German wine industry. Co-operatives receive the crop from about 30 per cent of the total German vineyard area and over three-quarters of production in Baden and Württemberg.[21]

Labelling at Schloss Vollrads, Rheingau

Many are now quality-focused with considerable grape growing and winemaking expertise and technology. In particular, despite being one of the biggest co-operatives in Germany, the *Badischer Winzerkeller* in Baden has been developing a range of small-volume bottlings of high-quality wines.

The domestic market has always been very important and the shift to drier styles of wine and the increase in red wine production were heavily influenced by changing tastes amongst German consumers. In 2021, 55 per cent of wine bought was white, 34 per cent red and 12 per cent rosé.[22]

Despite still being very much a beer-drinking country, Germany is the fourth largest consumer of wine in the world at approximately 20 million hL in 2018. It cannot satisfy this thirst purely from homegrown production and routinely imports 14 million hL per year. Note that a significant proportion is used for German Sekt production. 3m hL of imports are then re-exported.[23]

The volume of German wine exports has almost halved this century. In the first decade of the 2000s, Germany regularly exported around 2 million hL each year, accounting for between 20 and 25 per cent of total production. By the mid-2010s, exports had fallen to around 1 million hL per year (and have since remained there), closer to 10 per cent of total production. However, in the same period, the average price had risen from below €200 to €300 per hL.[24] This has been influenced by a reduction in the shipping of bulk wine and an increase in bottled exports, which are significantly higher in value per unit volume, as part of a strategy of the Wines of Germany (see below).

The top five export markets by volume are the USA, the Netherlands, the UK, Norway and Sweden. The USA and Norway are particularly important in terms of sales value per unit

volume, whereas the average price of exports to the UK and the Netherlands is considerably lower due to the continued, but shrinking, presence of inexpensive wines, often *Liebfraumilch,* on supermarket shelves.

The German wine industry's promotional body, the Wines of Germany, seeks to promote the quality and sales of German wines in the domestic and export markets. Most notably, they run a 'Riesling Weeks' campaign in 13 different countries, that encourage retailers and restaurants to promote German wines for a defined period (from a week to a month) each year.

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5 *Organic viticulture is becoming increasingly popular in Germany*, Wines of Germany (retrieved 17 January 2023)

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7 As above

8 As above

9 The German term for PGI is *geschützte geografische Angabe* (g.g.A.)

10 *Qualitätswein* was formerly known as *Qualitätswein bestimmter Anbaugebiete* (QbA). The German term for PDO is *geschützte Ursprungsbezeichnung* (g.U.)

11 Formerly known as *Qualitätswein mit Prädikat* (QmP)

12 The above wording reflects German wine law. It is common also to find the temperature described as '–8°C (18°F) or lower'.

13 Data set is wines sent in for quality control testing (Qualitätswein and Prädikatswein only). *Deutscher Wein Statistik 2022–2023*, Wines of Germany (retrieved 17 January 2023)

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