

20. Spain

Spain has a long history of wine production, with some evidence of vine cultivation for over five thousand years. When the sea-faring Phoenicians founded the city of Cádiz, on the southern coast of Spain, around 1100 BCE, their wine-making expertise meant that the port quickly became important for trading wine and evidence of their winemaking, in hollowed-out stone *lagares*, has been found nearby. Successive invading forces all left their mark on winemaking in the region; firstly, the Carthaginians brought improved winemaking techniques and then the Romans, after ‘pacifying’ the whole peninsula, brought stability and a huge increase in production volumes, most being exported all across their empire. At its fall, barbarians from northern Europe invaded, followed in 711 by the Moors who didn’t themselves drink wine but tolerated grape growing, some winemaking and consumption by others. Their gradual overthrow by the Christians, broadly from the north of Spain to the south over several centuries, restored wine production with evidence of exports out of Bilbao to several English ports during the 13th century.

Exports always depended on Spain maintaining cordial relations with other countries and numerous wars over the centuries ensured commercial turbulence. However, it was somewhat shielded from such fluctuations by trade with its newly founded colonies in the Americas. The key exports at this time were fortified wines, most notably from sherries from Jerez but also Fondillón, a fortified Monastrell from Alicante, and the raisined wines of Málaga.

Unfortified winemaking had progressed little since Roman times and, although Rioja had established itself as a leading wine region, quality was not particularly high and little was exported. In the late 18th century, Manuel Quintano y Quintano, a canon in holy orders whose family produced wines, travelled to Bordeaux, bringing back not only expertise in winemaking and cooperage but also some oak *barriques*. Very few producers followed his practices as it was ruled that there should be no price differential between the various wines produced in Rioja. As better practices and oak barrels were expensive, it meant that higher quality wines were less profitable.

The Spanish civil wars of the mid-19th century, disputing succession to the Spanish throne, meant that both Luciano de Murrieta, later the Marqués de Murrieta, and the Marqués de Riscal both sought exile in Bordeaux for some while, returning when safe to put their newly-found expertise into practice, including maturation in *barriques*. The quality of their wines eventually convinced the local government and other producers that these techniques were the way forward. A few years later, the phylloxera louse arrived in France and steadily devastated their vineyards. The wines of Rioja, both in their style and their closeness to the French border, were a suitable replacement and, to satisfy this sudden demand, many new wineries were founded, most particularly around the railway station in Haro, so that wine could easily be shipped in bulk to France to augment what little French wine was still being produced.

Phylloxera eventually reached Rioja and many other parts of Spain in the early 20th century and, although the cause and remedy were known, it led to a substantial reduction in production. The commercial impact was tempered somewhat by a drop in demand; France’s vineyards were now recovering and Spain had lost its overseas colonies so that those two key export markets had shrunk.

Nevertheless, the human cost was immense, with massive unemployment causing considerable poverty and significant emigration from all parts of Spain. Vineyards were replanted across the country but many indigenous grape varieties were now virtually extinct.

Wine production gradually recovered and, learning from past mistakes, the Rioja Wine Exporters' Syndicate was founded in 1907 to guarantee the authenticity of Rioja's wine in export markets. In 1926, Rioja also became the first Spanish wine region to establish a regulatory council (*Consejo Regulador*).

Despite such positive developments, quality wine production in Spain was hampered throughout much of the 20th century. The Civil War of 1936 to 1939 left the country under a dictatorship for nearly forty years, with the Spanish economy devastated firstly through the immediate internal impact of the civil war and secondly through the loss of export markets during the second world war and then the economic isolation of General Franco's government. Wine production continued but mainly through co-operatives that were producing high volumes of inexpensive wines. Although most Spanish winemakers had no experience of the wider wine world, Miguel Torres of the eponymous winery did study winemaking in France and, on returning to the family wine business in Penedès, Catalunya in the early 1960s, was permitted to put his learning into practice; some French and German varieties were planted, vineyards were trellised, temperature-controlled stainless steel tanks were installed and a winery laboratory established. The resulting wines showed what different styles were achievable in Spain and showed many others the path to follow.

From the mid-1970s, Spain's return to a constitutional monarchy and democratic rule has led to greater economic freedom, with Spain's accession to the EU in 1986 bringing further investment in wine production. Modernisation swept the country, with widespread investment in temperature control and stainless steel tanks, so that the quality level of basic Spanish wine has improved dramatically. In 1996, the legalisation of irrigation meant that more vineyards across a greater number of regions could produce a viable crop and, in this way, has caused production levels to rise significantly. In the last 30 years, greater research, investment, education and experience of winemaking in other countries has benefited the quality and diversity of Spanish wines at all price points. Despite its long winemaking history, Spain is a country in which new regions and styles of wine are being explored, whilst there is also significant interest and activity in revitalising many indigenous grape varieties, employing traditional winemaking approaches and returning old abandoned vineyards to production.

THE GROWING ENVIRONMENT AND GRAPE GROWING

Climate

In general terms, being located at 36–43°N, Spain can be considered a warm country. However, with an extensive coastline, several significant mountain ranges and a large raised plateau (the *meseta*) covering its central regions, climate can vary markedly over the different wine regions:

- The north west of the country is influenced by the Atlantic, and therefore has a maritime climate with high levels of rainfall throughout the year. Many of the vineyard areas in the north and north east are sheltered somewhat from the Atlantic by mountains and have more of a continental climate, though with some maritime or, to the north east, Mediterranean influences.



- The south and east of the country faces directly onto the Mediterranean, and vineyards in close proximity to the sea have a moderated climate with warm, dry summers and mild winters.
- The meseta, at an altitude of 600–900 m, covers a vast area over central Spain. The climate here is continental, with hot days and cool nights, though altitude can help moderate the heat.

The country's topography is a high plateau tilted from north-east (Pyrenees) to south-west (Andalucia), with lower ground formed by several major rivers along which many wine-growing regions are found.

Vineyard Management

Globally, Spain has the largest vineyard plantings with 964,000 ha under production.¹ However, it is only the world's third largest producer of wine (by volume), behind Italy and France, with a five-year average of 37.5 million hL per annum.²

This in part reflects the nature of many Spanish vineyards, which are made up of bush vines planted at low density. In La Mancha, the largest DO (Denominación de Origen) in Spain, vines can be planted at densities as low as 1,000 vines per hectare.

Low density planting is favourable in many regions due to the climate. With a low annual rainfall, as little as 300 mm in some parts of the country, it is helpful to reduce competition between vines for soil water. Although, irrigation for grape growing was nationally legalised in 1996, it is still controlled by the Consejo Regulador for each wine region. In some wine regions, it is only permitted in the establishment of young vines and in extreme cases of drought, while in others it may be permitted during the start of the growing season but not during the ripening period.

In many regions, there are significant plantings of old bush vines. These are increasingly being recognised as an asset, providing good quality fruit, and hence there is limited desire to grub them up and replant at higher densities, even if irrigation would permit that to be done. The very low yields from such vines is another reason for low production volumes for size of vineyard area.

Many areas of Spain receive very little rain in the growing season. However, during this time, it can often fall in heavy storms with temperatures rising quickly afterwards. This creates a risk of mildew and this is a concern across many regions across Spain. Spring frosts can also be a hazard in many areas with continental climates.



Low density bush vines in Calatayud

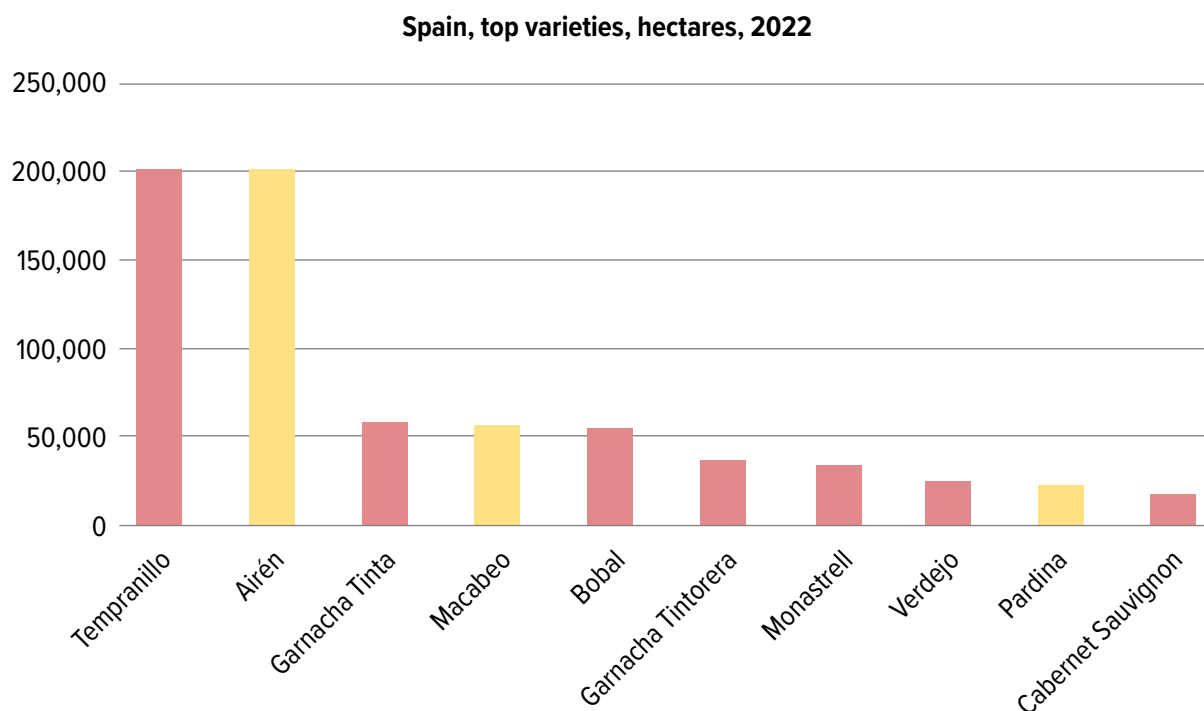
Phylloxera affected many regions in Spain in the early 20th century and the majority of vines are therefore grafted onto resistant rootstocks. Some regions with sandy soils, such as areas within Toro and Rueda, were unaffected and have some plantings of incredibly old ungrafted vines. One of the most common pests is European grapevine moth, which is generally managed through pheromone traps.

Many producers employ organic practices but far fewer are certified as such since they consider that few consumers in both the domestic and export markets are willing to pay a premium for organic wines and hence contribute towards the cost of attaining and retaining certification.

Spain remains a country of small vineyard holdings, with 68 per cent of vineyard plots being less than 0.5 ha in size and a further 20 per cent between 0.5 and 3 ha.³ This means that, despite marked advances in understanding of vineyard management over the last few decades, the level of vineyard mechanisation is still relatively limited.

Grape Varieties

Vineyard land is split relatively evenly between white and black grape varieties, with slightly more black grapes.



(Source: OeMV)⁴

The two grape varieties with by far the largest plantings are Tempranillo and Airén.

Tempranillo – This black grape variety is grown widely across several areas of Spain, where it can be known by various synonyms. Although it can be used to make inexpensive, fruity red wines, it is also a leading component in some of Spain's most prestigious and expensive wines, most particularly those from Rioja, Ribera del Duero and Toro (for characteristics see each of these regions). Its dominance, however, is relatively recent and is thought to be closely associated with the growth of Spanish wine in international markets and consumers' association of Tempranillo with Rioja, widely considered to be Spain's leading wine region.

Its ability to produce medium to high yields, depending on the site, has surely also helped its popularity with grape growers. However, quality focused growers and producers tend to limit its yields in order to produce concentrated, structured wines. Tempranillo is early ripening and, therefore produces its finest wines in warm climates where there is some cooling influence, such as altitude or cool winds. It is made into both single varietal wines and within blends of other local grape varieties that differ across the regions.

Airén – This white variety is mainly planted in the centre of Spain in Castilla-La Mancha and, although it makes inexpensive neutral white wines for early consumption, much of its production is distilled into Brandy de Jerez.

Garnacha Tinta – See Grenache in Black Grape Varieties in [The Rhône Valley](#) for more details of this grape variety. In Spain, it produces both red and rosé wines predominantly in the central north and north east including the autonomous communities of Rioja, Navarra, Catalunya and Aragon. From here on Garnacha Tinta will simply be referred to as Garnacha. Note that **Garnacha Tintorera** is a different grape variety also known as Alicante Bouschet.

Macabeo – This white grape is mainly planted in Catalunya where it is used for both still wines, usually for early consumption, and in Cava. It is also the main white variety in Rioja (where it is called Viura) and, although it makes a number of inexpensive neutral wines, it is also a leading component in many premium-priced wines that have been fermented and matured in oak.

Bobal – A black grape variety mainly grown near the east coast of Spain producing red and rosé wines. See further details in [Utiel-Requena](#), in the section Valencia and Murcia.

Monastrell – See Mourvèdre in [The Rhône Valley](#) for more details on this grape variety. In Spain, it produces red wines predominantly in the regions around Valencia and Murcia. It is well suited to the warm Mediterranean climate in these regions as it is late ripening and needs heat in the late growing season to become fully ripe.

Verdejo – This white grape variety is grown mainly in Castilla y León and especially in [Rueda DO](#).

Pardina is a white variety that is mainly used in the brandy industry. Many of Spain's other grape varieties will be covered in the entry for the wine region in which they are planted.

WINEMAKING

Winemaking practices in Spain have evolved considerably in the last 40 years. Youthful, fruity styles of red, white and rosé wines are made protectively, often with fermentation in stainless steel, temperature control and the use of inert gases, cultured yeasts, fining and/or filtration. Some inexpensive and mid-priced young reds may undergo carbonic or semi-carbonic maceration to enhance their fruity character.

Temperature-controlled, stainless steel fermentation is also common for premium red and white wines. However, some producers are choosing to use concrete tanks or eggs, and, less commonly but on the increase, amphorae, both for fermentation and storage.

Oak maturation is common for red wines, especially those mid-priced and above. Although Spain makes many good and very good unoaked whites, producers often decide to ferment and/or mature their top white wines in oak. White wines that are not matured in oak may be stored on the lees after fermentation to enhance their texture.

National ageing legislation specifies the minimum times that wines should spend maturing in oak barrels to be able to use terms such as *Crianza*, *Reserva* and *Gran Reserva*. The ageing legislation for individual DOs may be stricter than the national legislation, but they cannot specify lower minimum ageing requirements. The national legislation also specifies that the oak vessels must be of a maximum capacity of 330 L; again, the legislation for individual DOs can differ in this respect.

Category	Red wines		White and Rosé wines	
	Minimum total ageing time (months)	Minimum time spent in barrel (months)	Minimum total ageing time (months)	Minimum time spent in barrel (months)
Generic	No ageing requirement			
Crianza	24	6	18	6
Reserva	36	12	24	6
Gran Reserva	60	18	48	6

The legislation purely specifies minimum ageing periods and has been variously criticised both for being too prescriptive but also not prescriptive enough. On one hand, it automatically suggests a hierarchy of excellence, setting an expectation that Gran Reserva will be the highest quality wine and hence that the highest quality wines will be those aged for the longest periods of time in oak and bottle.

This may be a true reflection of the wines from many producers yet it is not necessarily appropriate for all styles of wine. On the other hand, no quality requirements are specified for the wines in each category (beyond standard regulations of the denomination), the age or origin of oak is not specified and only a minimum ageing requirement is given (many producers age for far longer than the minimum). The ageing categories therefore provide very little indication of style, quality or value for the consumer.

A number of producers have decided not to use these terms on their wine labels, either because they choose not to meet the criteria of the labelling terms (e.g. ageing their wines in larger vessels than specified, not meeting the minimum time required) or simply because they believe the terms will not benefit the selling potential or marketing of their wine. Although such decisions are made by individual producers, there are some regions where the ageing



New and older barrels in Ribera del Duero

categories are more commonly seen (e.g. Rioja, Ribera del Duero) and some where they are not (e.g. Bierzo, Priorat). The term *roble* (the Spanish for oak) is increasingly used, mainly for wines, typically red, that have been matured in oak for an unspecified duration, usually less than the requirements for Crianza. The term *joven* may also be used to denote wines that are released young, often with no or minimal oak ageing.

Many regions in Spain traditionally use American oak, originally due to strong trading relationships with America and the fact that it was relatively cheap compared to French oak. American oak is still widely found but the use of French oak has grown, and is particularly prevalent in DOs such as Penedès, Priorat and Ribera del Duero. Generally, winemakers will choose to use one or the other, or to use a blend, depending on the profile of flavours they want in their wines.

Rosé wines (rosado) are made in a number of Spanish regions. Similar to red and white wine production, much is inexpensive and sold in bulk. However, especially in recent years, Spain has produced a number of very good quality rosés at mid- and premium price points. A better understanding of vineyard management and harvesting times, improvements in winemaking and a focus on market trends has led to a move away from high alcohol wines with over-ripe, jammy flavours.

Classically, Spanish rosés have been deep in colour. The number of pale rosés, made in the style of Provence, has increased in recent years in line with consumer preferences, but there are still many producers who continue to make deeper coloured, fruity rosés, which are made through longer periods of skin contact. Most commonly, Spanish rosés are fermented in stainless steel and bottled soon after, although the most expensive wines may be fermented and matured in oak or stored on their lees to enhance texture and complexity. A small number of producers make rosé in a traditional style, most notably Bodegas López de Heredia. These wines are typically made from a mixture of black and white grapes (mainly black) that are macerated (sometimes beyond the beginning of fermentation), pressed and then fermented together. Often, these wines are matured in oak vessels, sometimes for a long time, which leads to a reduction in fruit flavours but a greater texture and increased complexity from secondary and tertiary flavours.

WINE LAW AND REGULATIONS

In common with other European Union countries, Spain follows a PDO and PGI system for its wines.

DO and DOCa/DOQ – Denominación de Origen (DO) is the Spanish term for PDO wines. There are 70 DOs in Spain, and they make up the vast majority of vineyard plantings. Rioja and Priorat are the only two wine regions that have the status of Denominación de Origen Calificada (DOCa) / Denominació d'Origen Qualificada (DOQ) (the latter term being in Catalan). To apply to be a DOCa/DOQ, the DO must have been established for a minimum of ten years. All wines must also be bottled at the producer's own property and the denomination must have various quality regulations in place including a tasting assessment by an external panel and a process to audit these extra restrictions and regulations.

VP – Vino de Pago (VP) is a category that applies to a small number of single estates with high reputations. The majority are in Castilla-La Mancha, with others in Navarra, Valencia and Aragon. Approved estates may only use their own grapes, which must be vinified and matured on their estate. These wines are also within the PDO category. They should not be confused

with the *Grandes Pagos de España*, an association of prestigious estates of which only some are qualified to label their wines as *Vino de Pago*.

VT – *Vino de la Tierra* (VT) is the term commonly used for PGI wines. There are around 40 VTs in Spain, the largest being Castilla.

Vino – This term is used for wines without a geographical indication.

The regulations of each denomination are generally set and controlled by their specific Consejo Regulador. This includes maximum yields, permitted grape varieties, vineyard practices such as irrigation, and winemaking regulations (including minimum ageing requirements). Packaging regulations are also specified by each Consejo Regulador. Bottling within the region is specified for the DOCa/DOQs of Rioja and Priorat and the majority of DOs, but not for some others, such as La Mancha, which allows their wines to be shipped in bulk.

WINE BUSINESS

Typical of a country of many producers with tiny landholdings, production is dominated in many regions by co-operatives, although negociants (who own some land but also buy in grapes) are also common in some regions. Wine estates that are entirely reliant on their own vineyards tend to produce relatively small volumes. The largest wine businesses for still, unfortified wines are J. García Carrión, Félix Solís Avantis, Pernod Ricard Groupe, Miguel Torres SA and Bodegas Martín Códax SA, and many of them have wineries within several regions throughout Spain.

Compared to many other major wine producing countries, domestic consumption is low (10.3 million hL, average 2018–2022).⁵ In recent years, there has been a trend towards drinking higher quality, higher priced wines, for example, those of DO status, with falling sales of wines without a designation of origin.

Spain exports a significant proportion of its wines and is the world's largest exporter of wine in terms of volume (23 million hL in 2021).⁶ However, the average price per litre is the lowest of any major exporting country (under less than half that of Italy and less than one fifth of that of France). This reflects the large proportion of inexpensive wines produced. Spain is the world's largest exporter of wine in bulk and, in 2021, this constituted 56 per cent of total exports, with some value within the supply chain consequently going to the foreign bottler than remaining with the Spanish producer.⁷ Relatively speaking, Spain produces only a handful of super-premium wines and generally the most expensive wines from a region's leading producers sell at lower prices than those from France and Italy. Unlike those two countries, Spain has not become fashionable on the investment market despite the quality of the top wines.

The main export markets in terms of volume are France (21 per cent of the export market) and Germany (16 per cent). Both of these markets are important sources for selling inexpensive wines. By comparison, the USA (which imports only 20 per cent of the volume of France), Germany and the UK import the most by value, with the USA in particular having a high value to volume ratio.⁸

[Foods and Wines from Spain](#) is the promotional body for the entire country, and aims to increase awareness of the diversity and quality of Spanish products (both food and wine)

through information, education and promotional activities. Individual DOs and VTs have their own Consejos Reguladores that also play a role in marketing their region's wines.

20.1. Galicia

The autonomous community of Galicia is located in the north west of Spain. Its proximity to the Atlantic mean many of its wine regions experience cool and wet weather to a greater or lesser extent.

RÍAS BAIXAS DO

Rías Baixas is the largest DO in Galicia with a production of approximately 280,000 hL in 2021, a considerable growth since 1991 when around 3,500 hL were produced.⁹ The DO has just over 4300 ha of vines, farmed by around 5,000 grape growers. There are around 180 wineries, ranging from small to very large producers, with co-operatives dominant, of which Bodegas Martín Códax, working with over 300 growers, is the largest producer.

After phylloxera, much of the vineyard land was replanted with hybrid varieties and high-yielding Palomino vines, and many vineyards were tiny plots of land whose owners would sell on their grapes to local producers; this small-scale grape growing continues across the region today. However, in the 1970s and 1980s, incentives to grow indigenous varieties and modernize winery equipment led to significant improvements in the quality of the wines. Able to provide quality wines, in a desirable style (fresh and fruity) and at an affordable price point, the wines of Rías Baixas quickly became popular, firstly in Spain and latterly within export markets.

The Growing Environment and Grape Growing

Spain's most westerly DO bordering the Atlantic ocean, Rías Baixas has a distinctly maritime climate. The Atlantic moderates annual temperatures, giving warm summers and mild winters. Annual rainfall is high at an average of 1,700 mm, which falls throughout the year. This means that fungal diseases and rain just prior to harvest are key hazards that can lead to significant vintage variation.

Fortunately, with so much rain, the soils (sand over granite bedrock) are free draining, helping to ensure that the roots are not sitting in water.

Over 95 per cent of production is from the **Albariño** grape.¹⁰ This grape variety is well suited to the damp climate, having thick skins that make it less prone to damage from rot. It is early to mid-ripening, and hence, with a warming climate and improved viticultural understanding and practices, can become fully ripe in most years. It produces wines that are high in acidity, with medium (–) or medium body, medium levels of alcohol and aromas and flavours of lemon, grapefruit and peach, sometimes with a floral note.

In Rías Baixas, Albariño is usually made as a single varietal wine. Other grape varieties permitted, with which it is sometimes blended, include Loureiro (early ripening, medium (+) acidity, aromatic citrus, pear, floral and herbal notes), Treixadura (mid-ripening, low acidity, apple and peach flavours) and Caiño Blanco (late ripening, high acidity, citrus flavours).

Small volumes of local black grapes, such as Sousón (the same as Vinhão in Vinho Verde across the Portuguese border), Caiño Tinto, are planted for red wines but form only one per cent of production.

Unusually for a DO, Rías Baixas is made up of five non-contiguous subzones. Val do Salnés is the oldest subzone and has the greatest plantings and concentration of wineries. It is located directly on the coast and is therefore the coolest and wettest area, generally producing the wines with the highest acidity. O Rosal lies along the River Miño as it reaches the ocean. Unsurprisingly, given its position on the border of Portugal (and the Portuguese wine region, Vinho Verde), its wines are often blends of Albariño, Loureiro, Treixadura and Caiño Blanco. With south-facing sites on the north bank of the river, it is warmer than Val do Salnés. These factors mean that the wines are slightly lower in acidity with primary flavours depending on the blend of grapes. Condado do Tea is inland from O Rosal and hence even warmer. It tends to produce wines that are riper in style with more peach fruit and slightly lower acidity, hence being easy to drink when young. Ribeira do Ulla is the newest subzone and, as yet, tends to produce inexpensive and mid-priced wines, and Soutomaior is the smallest subzone.

In general terms, the white wines from Rías Baixas tend to be high in acidity, with medium (–) or medium body, medium alcohol and aromas and flavours of peach, melon and lemon. They range from good to very good, with some outstanding examples, and mid-priced to premium. Producers known for their quality include Pazo de Senorans and Palacio de Fefiñanes.

The pergola (here called *parra*) remains a popular trellising system, often using granite stone supports in the humid atmosphere. This system was originally used to allow the growth of other agricultural crops underneath. However, the additional benefit for grape growing is



Backyard grape growing using a pergola in Val do Salnés



VSP trellising in Val do Salnés

that, when trained relatively high, this system also promotes air circulation under the canopy, reducing the likelihood of fungal diseases. Many of the bigger growers now use VSP trellising, which allows for mechanisation.

Winemaking

Winemaking is generally protective to retain fresh fruit flavours. The white grapes may be macerated for a few hours to enhance the intensity of the flavours and provide greater texture. Cool fermentation in stainless steel is typical and some producers may encourage at least partial malolactic conversion in cool years or in the coolest subzones (such as Val do Salnés) to reduce malic acidity rather than to introduce overtly buttery notes.

Inexpensive wines may be released early from the winery. More expensive examples are often stored on lees (*sobre lias*); one to two years being typical, but some wines being stored for longer. Usually, the lees are not stirred (or only occasionally), which could introduce oxygen, and the effect is mainly to the body and texture of the wine although some light creaminess may be evident.

A few producers ferment their most expensive wines in oak. The use of oak may vary from entirely large, old oak vessels purely giving texture, to a proportion of new oak, giving toasty, vanilla notes.

Wine Business

On average, just over a quarter of sales come from exports, a proportion that has increased significantly over the last couple of decades (in 2000, only around one tenth of sales came from exports). The USA is the biggest market, followed by the UK.¹¹

OTHER GALICIAN WINE REGIONS

Galicia has a number of other DOs with smaller production volumes than Rías Baixas but which are gaining increasing recognition on international markets. Further from the Atlantic coast, these DOs have less temperate climates with warmer summers and less rainfall than Rías Baixas. They all grow a range of local grape varieties, including those found in nearby Rías Baixas, but Godello and Mencía are arguably the two that are most recognised on export markets.

Ribeiro DO

Ribeiro DO is the most westerly of these DOs, situated just to the east of southern Rías Baixas. Although slightly more sheltered than Rías Baixas, it still has a maritime climate with temperate conditions and high rainfall. It produces mainly white wines; **Treixadura** is the most planted variety and made either as a single variety or as the lead component in a white blend with other Galician varieties. It is not unusual for producers to ferment or mature their most expensive wines in oak.

Ribeira Sacra DO

Further inland, Ribeira Sacra DO follows the valley of the River Miño northwards and of the River Sil eastwards from their confluence. The climate is mainly continental but, depending on the exposure of the site, there can be maritime influences. Many of the vineyards are situated on very precipitous and deep valley sides at various altitudes and aspects. The stony slopes



Vineyards in Ribeira Sacra with the River Sil in the background

provide good drainage and conduct heat during the day but make viticulture extremely labour intensive. The most important grape variety for red wines is **Mencía** (for more details, see Bierzo below). They tend to show red cherry and raspberry fruit, medium body and tannins, and medium (+) acidity. The majority are mid-priced and made in a fresh, early drinking style.

Valdeorras DO

Valdeorras DO is located further up the River Sil. It is the most easterly of the Galician DOs and has a continental climate, though still plentiful rain (700–1,000 mm per annum). The vineyards are planted at altitudes of approximately 300 m. Despite being renowned for slate mining, the region's vineyards are planted on a diverse range of soils. Valdeorras has gained a reputation as a producer of good and very good quality **Godello**, the wines showing citrus and stone fruit, sometimes with a herbal or wet stone character, and generally medium (+) acidity. Premium versions are often fermented and/or matured in oak to lend texture and a toasty, spicy complexity. Mencía is the most important black variety here but relatively little is planted compared to Godello.

Monterrei DO

Monterrei DO is located some way south of Ribeira Sacra, on the border of Portugal. Being inland and sheltered from ocean influence by the Sierra de Larouca mountains, it has a continental climate with hot summers and relatively low rainfall. Much of the production is inexpensive wine sold in bulk, but the region is starting to make some good quality **Mencía**, usually in a riper style than those of Ribeira Sacra, and some fruity **Godello**.

20.2. Castilla y León

The autonomous community of Castilla y León covers a vast area in the north of Spain. It is made up of a high-altitude plateau (the northern part of the *meseta*) with mountains to the north and south. As a result, many of its wine regions have continental climates, though with some maritime influences towards the west.

Within its boundaries is a number of internationally recognised DOs as well as the large Castilla y León VT.

BIERZO DO

Until fairly recently Bierzo made rather rustic wines for the local market. It was the arrival of Alvaro Palacios and his nephew Ricardo Pérez in the late 1990s, attracted by the slate slopes in the area (similar to the vineyards that had made their reputations in Priorat), that first demonstrated to the international market that Bierzo could make high quality wines and gave Bierzo winemakers and growers the confidence to strive for quality and higher prices.

The Growing Environment, Grape Growing and Winemaking

Bierzo is located in the north west of Castilla y León. It is climatically similar to some of the Galician wine regions but, being still further inland, it has warmer summers, cooler winters and lower but still adequate rainfall. The region has mountains or hills on three sides but opens to the west, allowing some maritime influence. Some years can be cool and rainy whereas others can be warm and dry, leading to a marked vintage variation.

Similar also to some more easterly Galician regions, **Mencía** is the key black grape, making up 75 per cent of all plantings, with some Godello and other white Galician varieties also grown.¹² Mencía is an early to mid-ripening grape variety and can lose its characteristic medium (+) or high acidity and quickly accumulate sugar, resulting in high alcohol wines if picked too late. It can produce wines that range from light bodied and fruity with medium tannins, to more concentrated examples with fuller bodies and higher tannins, depending on the growing conditions and winemaking practices.

Mencía must contribute a minimum of 70 per cent to any red wine blend, with Alicante Bouschet (a red-fleshed variety giving deep colour, and red and black berry fruit, also grown in Castilla La Mancha and Galicia) making up the difference. However, only 2 per cent of plantings in Bierzo are Alicante Bouschet and so many wines are made from 100 per cent Mencía.¹³

The flat plain in the middle of the DO and the lower slopes of the mountains have fertile silty loam soils and tend to be the source of inexpensive or mid-priced wines grown at relatively high yields. These wines are often medium (–) in body and tannins with flavours of red fruits such as raspberry and cherry. They are made for early consumption and sometimes made by carbonic or semi-carbonic maceration. They are usually not matured in oak. These wines are often good quality and mid-priced.

The best vineyards are generally considered to be located on the hillside slopes at 500–850 m that have good drainage, and this, together with the shallow, poor slate soils, limits vigour. The altitude of the vineyards is a cooling influence and this, and a large diurnal



A sloped vineyard of bush vines in Bierzo

range, helps to slow sugar accumulation and retain acidity while flavours and tannins develop. The steepness of the slopes and the age of some vineyards means that bush vines are most common. The area has a significant proportion of old vines, with around 80 per cent of vineyards in the entire DO estimated to be over 60 years old.¹⁴ This, together with poor soils, means that average yields are low and the overall costs of production are high.

The wines from the slopes tend to show more concentration than those from the plain, with medium to medium (+) body and tannins, higher alcohol and ripe red cherry and plum fruit, sometimes with a floral or herbal note. They are often matured in oak contributing a spicy character, but care has to be taken not to mask some of Mencía's more delicate aromas. These wines are often very good to outstanding in quality and are mid-priced to premium, with some super-premium examples. Significant producers include Descendientes de J. Palacios and Raul Perez.

Wine Law and Wine Business

There can be significant differences in volume produced each year, the annual average over the last five vintages to 2020 being approximately 83,000 hL. Almost 2,400 ha is planted, and tended by just over 1,100 growers, many with very small plots. This means that tending or harvesting vineyards by machine is very rare. Almost half of the growers are associated with one of the region's co-operatives. The region has 74 wineries, a significant proportion of which have been established in the last 10–15 years.¹⁵

In 2017, the Consejo Regulador recognized new classifications within DO Bierzo, based on specific geographic characteristics, that will be used to designate wines sourced exclusively from villages and vineyards of particular note, with significant restrictions on yields compared to the DO. This is similar to the classifications recently introduced in DOQ Priorat.¹⁶

TORO DO

The Growing Environment and Grape Growing

Toro is located in the west of Castilla y León, the River Duero (River Douro in Portugal) running through the region. Located far inland, it has a continental climate with hot summers and cold winters which, combined with its altitude (620–750 metres), means that the region has a large diurnal range, with cool nights that help maintain acidity in the grapes. However, without any moderating influences, spring frosts can be a problem.

The main grape is **Tinta de Toro**, considered by some to be a form of Tempranillo that has adapted to the local climate and by others to be a separate autochthonous variety of Toro.¹⁷ In either case, due to the intensity of the sun, Tinta de Toro is thought to have thicker skins than Tempranillo grown elsewhere in Spain, which results in wines with greater colour and higher tannin levels. Red wines must be a minimum of 75 per cent Tinta de Toro, with the remainder being Garnacha. Rosé (from either Tinta de Toro or Garnacha) and white wines (from Malvasía or Verdejo) can also be made.

Rainfall is low and irrigation is not permitted from June until after harvest. To manage the limited water, many vineyards are planted at low density with a low number of bunches per vine (the maximum permitted density of vines is a low 2,700 per hectare). Bush vines make up the vast majority of plantings. Sandy soils in the region mean that phylloxera has not been a problem and many vines are ungrafted. Around one fifth of vines are over 50 years old and there are a number of vines over 100 years old.¹⁸



Sandy soils and low-density planting in Toro

The warm growing season, intense sun and low yields all contribute to producing wines that are deep in colour, full-bodied, often have high alcohol, with high tannins and ripe flavours of blackberry and blueberry, but the cool nights help to deliver medium (+) or even high levels of acidity. Site selection can be important; cooler sites providing slower ripening can be found at the higher-altitude west of the region and by choosing north-facing aspects. Such care must be taken, as the Consejo permits a maximum alcohol of 15% abv for red wines, and lower levels for whites and rosés.

Winemaking

Inexpensive and mid-priced wines may have undergone carbonic maceration to boost the fruity flavours and extract less tannin, making an approachable, early drinking style. They tend to be of acceptable to good quality. Premium and super-premium wines, which can be of very good or outstanding quality, are matured in oak; the concentration of fruit in these wines able to balance the flavours of high proportions of new oak. Here, both American or French oak (or a mixture) is used. Examples of producers known for their quality include Teso La Monja and Numanthia.

Wine Business

Toro has a long history of wine production yet it has been somewhat hampered, when compared to other regions, by its location far away from any major cities or ports. However, as Ribera del Duero became increasingly popular and its land prices rose, many investors began to show interest in Toro, its near neighbour. The number of wineries has increased dramatically over the last 20 years, with eight wineries in 1998¹⁹ to over 60 today.²⁰ Around 96,000 hL of Toro wine was sold in 2016.²¹



Ripening Tempranillo grapes

RIBERA DEL DUERO DO

The first winery to be established in Ribera del Duero was Vega Sicilia in the late 19th century, and it is still considered to produce some of the highest quality wine in the region.

However, until the 1990s, there were very few wineries in Ribera del Duero, after which the number of vineyard plantings and new wineries has exploded. (There were thought to be around nine wineries at the formation of the DO in 1982, but over 300 in 2021.)²² The winery that sparked the change was Alejandro Fernandez's Pesquera. After these wines started to win international acclaim in the 1980s, many producers, who were until that point sending their grapes to the local co-operatives, were inspired to vinify their grapes to make wines and bottle it under their own labels. Furthermore, the relative proximity of Madrid meant that it soon became popular amongst Spanish drinkers of high quality wines. Much investment has also come from wineries in other regions, particularly Catalunya and Rioja.

The investment in the area has undoubtedly been positive and has boosted the status of the region as a whole. However, many relatively newly founded wineries are still finding their feet and, with such a rapid expansion of the vineyard area, there is a potential danger that the overall quality of production from the region could be diluted.

The Growing Environment and Grape Growing

Ribera del Duero lies in the upper valley of the River Duero. It has a similar climate to Toro and Rueda to its west, though summers are slightly hotter, winters colder and the vineyards can be even higher in altitude (750–1,000 m). Frosts are a problem and occur both in spring and in autumn, limiting the time that the grapes can be left on the vine and causing serious loss of yield in some years; heaters, vine spraying with water, and occasionally, helicopters are used

to combat this. Rainfall is relatively low at 400–600 mm; however, irrigation can be used at certain times of the year but not during the ripening period.

As in Toro, there is a range of altitudes and aspects, with the eastern side of the appellation being higher and cooler. As many producers grow only, or predominantly, Tempranillo, here called **Tinto Fino** or Tinta del País, the use of different sites with slight changes in climate or aspect can be useful in gaining balance, complexity and ensuring consistent yields (for example, flat sites and north-facing sites are most at risk of frost). This variety accounts for 96 per cent of plantings in 2021. Around half of the vineyards are planted to bush vines, and around a quarter of vineyard plantings are over 40 years old, with a number of vines over 100 years old. Newer vineyards are often planted on trellises as these are quicker to establish. The average size of vineyard per grower is three hectares.²³

Winemaking and Wine Law

The DO used to permit only red and rosé wines to be produced. However, changes to the legislation in 2019 now allow the production of white wines within the DO. The local white variety, Albillo Mayor, must make up at least 75 per cent of any blend. The vast majority of production is red and these must be a minimum of 75 per cent Tempranillo, with Cabernet Sauvignon, Merlot, Malbec, Garnacha and Albillo (this white variety is thought to contribute freshness to the blend, but, in practice, is rarely used) also permitted.

In reality, many wines are made entirely from Tempranillo. The wines tend to be full-bodied, often with high alcohol and ripe flavours of blackberry and plum, with vanilla and chocolate aromas from new oak. French oak is popular, some wineries use a blend of French and American, and it is not uncommon for premium and super-premium wines to be matured in 50–100 per cent new oak. There is a general trend for less extraction, with less time on skins post-fermentation, and/or less new oak amongst quality-focused producers. Overall, the wines of Ribera del Duero tend to be good to outstanding in quality and mid-priced to super-premium. As well as Vega Sicilia, significant producers include Dominio de Pingus and Bodegas Aalto.

The ageing categories of Crianza, Reserva and Gran Reserva are commonly used in Ribera del Duero, with Crianza by far the most produced and Gran Reserva quite rare. The majority of wine is however labelled without an ageing category specified.²⁴

Wine Business

In recent years, sales have ranged from approximately 600,000–700,000 hL.²⁵ In 2019, almost 20 per cent of production was exported, with the main markets (by volume) being Switzerland, Mexico, the USA, Germany and China.²⁶

RUEDA DO

In marked contrast to Toro to the west and Ribera del Duero to the east, Rueda produces almost entirely white wines. Until around 50 years ago, Rueda produced oxidative fortified wines, a style no longer favoured by consumers (although a few producers continue to make these traditional wines). In the early 1970s, the Marqués de Riscal winery in Rioja correctly considered that the local Verdejo grape could make the fresh, fruity white wines that consumers were starting to demand, if it was handled protectively and fermented in temperature-controlled stainless steel. Their investment in Rueda was the catalyst for

the region's transformation, as many other producers followed this lead, and this style of winemaking is now synonymous with the region.

The Growing Environment and Grape Growing

Rueda has a similar climate to Toro and Ribera del Duero, with hot, dry summers, cold winters and low rainfall. The vineyards are at 700–800 m altitude, resulting in cool nights that help to retain acidity in the grapes. The bedrock in the region is limestone, with a sandy clay sub-layer and then a topsoil of stones (though in some areas the topsoil is sand). This tends to be free draining and low in organic matter, reducing the vigour of the vines.

The key grape variety is **Verdejo**. It is relatively drought tolerant and therefore able to withstand the lack of rainfall in the region. It produces wines with medium to medium (+) acidity, medium alcohol and apple, pear and peach characteristics often with a herbal note (fennel) and a slight bitterness on the finish. **Sauvignon Blanc** is the next most important grape variety and can either be blended with Verdejo or be made as a single varietal wine.

New vineyards tend to be VSP trellised. Harvesting at night is desirable, allowing the grapes to be picked and transported at the coolest temperatures, and trellising makes this possible. However, there are also some very old bush vines (including some on sandy soils that predate the outbreak of phylloxera) which account for around 10 per cent of the planted area and have not been grubbed up due to the quality of their fruit.²⁷



A mixture of old bush vines and VSP trellising in Rueda

Winemaking and Wine Law

The most inexpensive wines are generally made in a protective way, with cool fermentation in stainless-steel vessels, and are bottled to be sold soon after. As in much of Spain's white wine production, cultured yeasts are generally used for their reliability and ability to promote the fruity flavours of the wines. Quality levels are generally acceptable to good. Mid-priced wines tend to have undergone a period of lees ageing (from a few months up to one year), often with regular lees stirring, which brings body and texture to the wine, and can often be of

good quality. Frequently, the most expensive Rueda in a producer's range, which is usually still mid-priced, is fermented and/or matured in oak, potentially bringing body and texture as well as aromatic complexity from toasty, smoky notes. Malolactic conversion is generally avoided in all styles to retain acidity. These wines are often good or very good in quality; significant producers include Bodega Belondrade y Lurton.

To be labelled as either Verdejo or Sauvignon Blanc, the wines must contain at least 85 per cent of the named grape variety. However, it is common for wines to be made entirely from the named grape variety. DO Rueda can be used for blends that do not meet the requirements for varietal labelling. However, in reality many producers use DO Rueda, rather than DO Rueda-Verdejo, to denote their least expensive wine even if it could legally be labelled as DO Rueda-Verdejo.

A small proportion of red and rosé wines is also produced, mainly from Tempranillo. However, with a number of nearby appellations, such as Ribera del Duero and Toro, producing mainly red wines, local competition is high.

Wine Business

The vineyard area has seen exponential growth in the last twenty years. From 2000 to 2019, production volumes have almost quadrupled.²⁸ The fruity, crisp early drinking style of the wines, together with an inexpensive price point, has been extremely popular on both the domestic and global markets. However, competition from other regions and countries making this style of wine is high and Rueda producers are increasingly looking to produce wines of higher quality and with more character.

Sales of Rueda wines have increased substantially over the last 20–30 years. In the 20 years from 2002 to 2021, sales by volume have increased four-fold. This has mainly been driven by increased sales in the domestic market but sales in export markets have also grown. In 2021, 14 per cent by volume was exported. The top export markets (by volume) are the Netherlands, Germany and USA.²⁹

Whilst around 60 per cent of total output is made by producers local to the area, a significant proportion comes from wineries owned by companies based outside the region; for example, a number of Rioja and Ribera del Duero producers have a Rueda as a white wine in their portfolio.³⁰

CASTILLA Y LEÓN VT

Castilla y León VT covers the autonomous community of the same name. The land is on the northern part of the *meseta* and is protected from any Atlantic influence to the north by mountains. It has a continental climate with summer temperatures moderated by altitude. A large number of different grape varieties, both local and international, is permitted.

The VT permits producers located outside the DO boundaries to produce wine with a geographical indication. It also allows producers who are located within any DO boundaries to make wines in styles or from grape varieties that are not permitted in their DO. Although the VT covers a large area, the actual vineyard plantings for VT wines is relatively low at almost 9,000 ha, whereas the DO vineyards within its boundaries make up over 63,000 ha. Although many of the wines are inexpensive or mid-priced, there are also some premium examples.

20.3. Rioja

Rioja is Spain's most well-known wine region and a significant producer of good to outstanding quality wines at price points from inexpensive to super-premium. There is a large number of globally recognised producers, some of which are mentioned below. (A brief history of Rioja has already been covered in the general introduction to Spain.)

THE GROWING ENVIRONMENT AND GRAPE GROWING

Climate and Vineyard Management

The Rioja DOCa is located in the north of Spain. It is to the north-east of the main DOs in Castilla y León and is bordered to the east by the DO of Navarra. The DOCa is 100 kilometres (60 miles) long running in a north-west to south-east direction along the path of the River Ebro, and reaches approximately 40 kilometres (25 miles) wide in places.

To the north is the Sierra de Cantabria, protecting Rioja from the worst of the Atlantic weather, and to the south, the Sierra de la Demanda (part of the Sistema Ibérico, the mountain range on the north-east edge of the *meseta*) sheltering the vineyards from weather from the warmer centre of the country. In general, the further west or higher altitude the site, the more rain it receives. By comparison, the valley of the Ebro, as it flows towards the Mediterranean broadly from the higher north-west to the lower south-east of the region, is relatively open and hence, while Rioja is far from the coast, its eastern side gains some Mediterranean influence. Although the River Ebro is the largest river in the region, it has several tributaries, their valleys providing vineyard sites with varying aspects and soils.

Most of Rioja's vineyards lie in the autonomous community of La Rioja but also with some in the province of Alava in the Basque country and a smaller number in the province of





Vineyards in Rioja Alavesa with the Sierra de Cantabria in the background

Navarra. More notably however, Rioja is divided into three zones; Rioja Alta, Rioja Alavesa and Rioja Oriental (which can now also appear as labelling terms, see [Wine Law and Regulations](#)). It is possible to make broad generalisations on the climates of these zones but the topography and soils are generally so varied that it has been suggested that a re-mapping and renaming of Rioja's zones could be helpful.

Rioja Alta – This is the largest zone, lying predominantly to the south of the River Ebro and to the west of the city of Logroño. It is generally continental with some maritime influences. The area around the Ebro is at relatively low altitudes, and hence relatively warm, with a range of alluvial soils. The north west corner of the zone is cooler and wetter and the soils are calcareous clay. The southern part of the zone is at altitudes of 700 m, it is relatively cool and wet with several north-facing slopes and has patches of ferrous clay, which tend to be cooler and more water retentive.

Rioja Alavesa – This is the smallest zone and lies to the west of the city of Logroño but to the north of the River Ebro, directly corresponding to the vineyards in the Basque country. It is relatively cool and wet, similar to the north west of Rioja Alta. The vineyards are located up to around 700 m and the soils are calcareous clay.

Rioja Oriental – This zone is only slightly smaller than Rioja Alta and lies to the east of the city of Logroño, both north and south of the Ebro. It was originally called Rioja Baja, describing the position of this zone further down the course of the River Ebro, but as it also means 'low', this was thought to have negative connotations about the quality of the wines. The northern part of Rioja Oriental around the River Ebro is relatively low altitude and is the warmest and driest area in Rioja. To the south of the zone, vineyards are located at 500–1,000 m in altitude and, at the highest altitudes, average temperatures can be just as cool as those in the Rioja Alta and Rioja Alavesa. Here, soils are a mixture of calcareous clay and ferrous clay.



Low altitude, flat vineyards in the northern part of Rioja Oriental

Over the last few decades, climate change has made high altitude vineyards not just more viable, but more desirable as winemakers seek to produce wines with more freshness and balance, whereas previously grapes would struggle to ripen. The area most at risk from climate change is thought to be the low altitude vineyards in Rioja Oriental, which is already warm and suffers from drought.

Vintage variation can be marked, as, in any year, parts of Rioja may receive more or less influence from the Atlantic (bringing cooler, wetter weather) and the Mediterranean (bringing warmer, drier weather). However, it is difficult to generalise any vintage characteristics over such a large and varied region. Some producers aim to produce consistent products year on year, where blending can be an important part of attaining such consistency, whereas other producers look to make wines that represent the vintage.

In 2021 there were just over 66,000 ha of vineyards, an increase of 50 per cent compared to plantings in 1990, and a figure that is still growing gradually. Production was 2.8 m hL.³¹ When Spain joined the EU, funds became available for restructuring of vineyards and now a significant proportion are trellised with VSP, making mechanisation more viable. However, Rioja also has considerable plantings of old bush vines, some being over 100 years old.

Black Grape Varieties

Rioja is dominated by plantings of black grape varieties (91 per cent in 2020).³²

Tempranillo – This is by far the most planted grape, making up 88 per cent of plantings of black grape varieties. Its dominance is a relatively recent phenomenon as, 50 years ago, there was greater diversity in the grape varieties planted, with similar sizes of plantings of Tempranillo and Garnacha.

However, Tempranillo's ability to reliably produce larger yields (especially if quantity rather than quality is the focus) meant many Garnacha vines, especially in Rioja Oriental, were replanted with Tempranillo. The legalisation of irrigation compounded this action, as Garnacha's suitability to drought conditions became less important. Nowadays, quality-minded

producers in Rioja Oriental have begun to replant Garnacha, which is considered to be better suited to the warm, dry conditions than early ripening Tempranillo.

By comparison, Tempranillo is well suited to the Rioja Alta and Rioja Alavesa, where it is generally able to ripen quickly even in cooler, high altitude sites with cool clay soils.

It is the dominant component in most red Rioja, providing raspberry and black plum fruit with medium to high levels of tannins and acidity. Some producers choose to make single varietal Tempranillo Rioja rather than blend it with the other permitted grapes.

Garnacha – This is the second most planted grape variety, but only makes up around 8 per cent of plantings of black grape varieties. As noted previously, it is particularly well suited to the warm, dry conditions of Rioja Oriental. In blends it provides ripe strawberry fruit, with lower tannins and a fuller body than many of the other grape varieties.

Graciano – This is a late ripening grape variety. It is drought resistant, but only produces small yields and is susceptible to fungal diseases. It contributes high acidity and tannin and fresh black fruit flavours to a Rioja blend. Less ripe fruit shows a distinct leafy character. It is occasionally produced as a single varietal wine. It makes up just over 2 per cent of plantings of black grape varieties.

Mazuelo – Also called Cariñena and, outside of Spain, Carignan (for more details, see [South of France](#)). In Rioja, it can be used to contribute high acidity to the blend. As with Graciano, it makes up just over 2 per cent of plantings of black grape varieties and is very occasionally produced as a single varietal wine.

Maturana Tinta – Also called Trousseau (for more details, see [Jura](#)). Maturana Tinta became a permitted variety in Rioja in 2009 and plantings are tiny but increasing. It contributes a deep purple colour, high acidity and fresh cranberry and blackberry flavours to the blend.

White Grape Varieties

A range of local and international grape varieties is permitted in the production of white Rioja. The most important are:

Viura – Also called Macabeo in other areas of Spain, and Macabeu in Roussillon. Viura is the most planted white grape in Rioja, making up 68 per cent of plantings of white grape varieties (equating to 6 per cent of total plantings in Rioja). It is late budding, late ripening and susceptible to botrytis and therefore is best suited to warm, dry sites. It is a relatively neutral grape variety and can make a broad range of styles. When grown at high yields and fermented in stainless steel it can produce simple whites for early consumption. However, when grown for lower yields and matured in oak vessels, it can produce concentrated, complex wines with long ageing potential.

Tempranillo Blanco – This white mutation of Tempranillo was first discovered in 1988 and became a permitted variety for Rioja in 2004. Plantings have risen quickly and it now makes up approximately 13 per cent of white plantings, making it the second most planted white grape variety in Rioja. It produces wines with high acidity and flavours of lemon, grapefruit and pineapple.

Malvasía and **Garnacha Blanca** are typically used as blending components to add a greater diversity of flavours, generally in oak-matured mid-priced and premium wines.

Verdejo and **Sauvignon Blanc** are made either into single varietal wines or lend aromas to blends with Viura typically in inexpensive unoaked styles.

WINEMAKING

Winemaking for Red Wines

Rioja makes a variety of styles of red wine, made possible through the blending of different grape varieties, the selection of different vineyard areas, and the use of differing winemaking techniques, in particular for extraction and maturation.

Ageing regulations have had a significant impact on the styles of Rioja available on the market and continue to do so. The presence of such regulations led to a standard branding hierarchy with young wines at the bottom (least expensive and supposedly of lowest quality) and the oldest wines at the top (most expensive and supposedly of highest quality). The regulations of the Rioja Consejo not only specify minimum ageing to be labelled Crianza, Reserva and Gran Reserva but also that only 225 L barriques can be used.

However, the regulations for these age categories only specify ageing requirements, whilst practices in the vineyard and winery that may be conducive to quality are not stipulated. Therefore, even though two producers' Gran Reserva wines will have been aged in barriques for a minimum of two years, and in bottle for a further three years, they can still be very different in style, quality and price.



Barriques in Rioja

In the 1990s, a handful of producers launched premium wines, labelling them without an ageing category, and so fitting into the category of 'generic wine' which does not specify any ageing requirements. Low yields and selected parcels of vines were used to make very ripe-fruited, concentrated and structured wines that had been aged in new French oak. These wines, often termed *vinos de autor*, were a significant step away from many of the wines made in the previous decades that did not focus so much on concentration and extraction and underwent long ageing (often much longer than the minimum ageing requirements) in American oak, resulting in wines with aromas of dried fruit, mushroom, cured meats, vanilla and coconut.

Whilst these two stylistic camps still exist in Rioja today, the majority of wines could be said to sit somewhere between these two extremes. The common trend is to highlight the characteristics and quality of the grapes or vineyard site. This is achieved by producers in various ways including selection of harvest dates (often earlier), more gentle extraction, use of older and/or larger oak vessels or other vessels such as concrete tanks or amphorae, and shorter maturation periods. Producers choose whether to follow the ageing regulations and release their wines labelled within an ageing category or not. French oak is now more common than American oak, though there are still some producers who use only American oak and even more that may use a proportion of American oak in a blend.

Due to the structure of the industry, with many small growers, relatively few wineries and a large number of co-operatives, blending parcels of grapes from various parts of the DOCa has long been a feature of winemaking in Rioja, and remains a necessity especially for large producers. Often, blending of grapes or wine from different zones is desirable to create a certain style and quality; Garnacha is arguably best suited to growing in Rioja Oriental whereas Tempranillo is often of higher quality from Rioja Alta and Alavesa, and hence very good and outstanding Tempranillo-Garnacha blends may often be made from grapes across the DOCa.

However, there are many producers who make wines from a single grape variety (usually Tempranillo or Garnacha) and a number that make at least one single vineyard wine, often an old-vine field blend. With new regulations allowing the name of a vineyard, village or zone to appear on the label (see [Wine Law and Regulations](#)), it remains to be seen what the reaction of the producers and the market will be.

Winemaking for White Wines

It is perhaps easier to categorise white Rioja into different styles, though outliers do exist. Much inexpensive white Rioja is made in a simple, unoaked style for early drinking. It is handled using protective winemaking techniques, fermented to dryness at cool temperatures in stainless steel, and then bottled soon after. Wines made from high yields of Viura can be relatively neutral with medium acidity, but grape varieties such as Verdejo, Tempranillo Blanco and Sauvignon Blanc, either in a blend with Viura or as single varietal wines, can provide more flavour intensity and acidity. These wines tend to be of acceptable to good quality.

Mid-priced and premium white Rioja tends to be made in an oaked style. Until relatively recently, many of these wines were made in an oxidative style and, without much fruit or fresh acidity, these wines did not appeal to modern consumers. However, in the last five to ten years, these wines have dramatically changed. Oak maturation is still used but these wines are now more balanced and fresher. Many producers are avoiding malolactic fermentation to retain freshness. Viura is the main grape variety, often grown at lower yields to give more concentration and body. More minor varieties such as Malvasía and Garnacha Blanca are

sometimes blended in, giving a greater range of flavours. The wines tend to have medium (+) body and acidity, with subtle citrus fruit and some smoky and nutty complexity from oak. They are generally of good or very good quality, though outstanding wines exist.

Two wineries release very old bottlings of white wines in the classic oxidative style, namely Castillo Ygay from Marqués de Murrieta and Viña Tondonia Gran Reserva from López de Heredia. These wines sell for super premium prices and are of outstanding quality, with intense, complex tertiary notes of nuts, honey and dried fruits balanced by high acidity.

Winemaking for Rosé Wines

Rioja makes a small volume of rosé wines, but some of these are amongst the highest quality and most expensive in Spain. They tend to be made from Tempranillo or Garnacha and are made in all of the styles described within Winemaking in Introduction to Spain.

WINE LAW AND REGULATIONS

Rioja's wine laws have undergone a number of changes in recent years. Rioja had long been a PDO without further geographical delimitations. Although the subzones of Rioja Alta, Rioja Alavesa and Rioja Oriental may be familiar to wine enthusiasts, these terms could not be mentioned on Rioja's wine labels. Single vineyards or villages could also not be named.

Growing discontent with this situation amongst a number of producers caused the Consejo Regulador to address the situation. For instance, renowned producer Artadi had left the DOCa at the end of 2015 and, just after, the Basque Asociación de Bodegas de Rioja Alavesa (ABRA) proposed the creation of a separate classification of Viñedos de Alava. This prompted the Consejo Regulador to review their regulations; new legislation was approved in 2017 and published in 2018, meaning that producers who meet the new specifications can now label their wines with any of the following:

Vino de Zona – All grapes must be sourced from the single zone named (Rioja Alta, Rioja Alavesa or Rioja Oriental). One exception is that 15 per cent of the grapes may come from a vineyard outside the zone, providing that vineyard borders the zone mentioned and the producer can provide evidence that they have been sourcing grapes from the vineyard for 10 consecutive years. Vinification, ageing and bottling of the wine must take place within the zone. Wine labels may indicate the zone of production.

Vino de Municipio – All grapes must be sourced from the municipality (such as a village or group of villages) named, with a similar 15 per cent rule allowing grapes to be sourced from a municipality that borders the named municipality, if grapes have been sourced from there for 10 consecutive years. Vinification, ageing and bottling of the wine must take place within the named municipality, meaning that a producer must have a winery in that municipality for wines to be labelled in this way. This differs from, say, Burgundy where the wines of many different communes can be vinified in the same winery. Wine labels may indicate the municipality of production, with the option of the zone of production.

Viñedo Singular (Single Vineyard) – All grapes must be sourced from particular vineyards or estates that constitute the formal *Viñedo Singular*. Vinification, ageing, storage and bottling must take place within the same winery. The producer must have owned the vineyard for a minimum of 10 years, the vineyard must be a minimum of 35 years old, and yields must respect specified maximum levels. The vineyard must be hand harvested and treated in a sustainable

way, with some restrictions on pruning during the growing season. Checks on traceability will be carried out and the wine must be authorised by a tasting panel. Wine labels may indicate the municipality and zone of production as well as the vineyard/ estate and the phrase *Viñedo Singular*.

It is too soon to tell whether such legislation will be a success, both with producers and with consumers.

These geographical delimitations sit alongside the traditional ageing categories. In Rioja, the required period of time in oak vessels must take place in barrels of 225 L (*barriques*).

Category	Red wines			White and Rosé wines	
	Minimum total ageing time (months)	Minimum time spent in barrel (months)	Minimum time spent in bottle (months)	Minimum total ageing time (months)	Minimum time spent in barrel (months)
Generic	No ageing requirement				
Crianza	24 (from 1st October of year of harvest)	12	none	24 (from 1st October of year of harvest)	6
Reserva	36	12	6	24	6
Gran Reserva	60	24	24	48	6

(There is no stipulation for minimum time spent in bottles for white and rosé wines.)

WINE BUSINESS

Similar to many other Spanish regions, Rioja is largely made up of small vineyard plots. Over 50 per cent of the surface area is made up of vineyards of 1 ha or less and over 75 per cent of the surface area is made up of 2 ha or less.³³ 14,300 grape growers farm the 66,300 ha of vineyard land and, in 2020, over 40 per cent of these grape growers sold wines to one of the co-operatives in the region. Much wine made in co-operatives is sold on to merchant businesses although some co-operatives sell at least a proportion of their wine under their own brand.

In terms of wine production, Rioja has wineries of all sizes. There is a handful of very large producers (the top 10 producers make up 47 per cent of total sales in 2020) and yet 84 per cent (283) of producers sell small volumes, constituting just 12 per cent of the sales.³⁴ Many producers are also merchants, perhaps owning some of their own vineyards, but mainly buying in grapes and newly made wine.

Total sales of Rioja wines are generally slowly increasing. Whilst the domestic market has remained relatively constant, growth has come from export markets.³⁵ Exports made up approximately 37 per cent of sales volumes in 2020 and the key export markets were the UK, Germany and the USA.

On the Spanish market, Crianza is the most popular style of red wine, whereas more Reserva and Gran Reserva wines are sold on export markets, with large quantities of 'generic' wines are sold on both. Sales of white and rosé wines are rapidly growing, particularly on export markets, albeit from a small base.

The average bottle price of Rioja wines is substantially higher than the average bottle price of Spanish DO wines in general. However, the average prices for Rioja are much below those for wines from the most prestigious regions in France and Italy. With relatively cheap vineyard land and cheap prices for grapes grown on some of the warmer, flatter areas of the region, there is much good value, inexpensive Rioja. There are many Rioja wines selling at premium prices, but few at super-premium prices, and there is a relatively small investment market.

The Consejo Regulador puts strong emphasis on the marketing of Rioja wines, using PR companies in local markets to organise Rioja-focused tastings for trade and consumers and ensure media listings. The key message is to highlight Rioja's value for money as well as its diversity.

A few producer groups have formed to better promote the wines of like-minded producers and highlight the diversity of Rioja's wineries and wines. Bodegas Familiares de Rioja is a group of around 40 small and medium-sized producers who promote their wines under this heading and campaign on issues that particularly effect small producers, such as the minimum stock holding (22,500 L) for wineries registered to age wine for release as Crianza, Reserva, Gran Reserva. Rioja 'n' Roll is a group of relatively small, first-generation producers who are focused on quality wines from particular vineyard sites, working in collaboration to promote their wines and a different perspective of Rioja. A further group based in Alava, in the Basque country, are leading a campaign to break away from La Rioja.

20.4. Navarra

THE GROWING ENVIRONMENT AND GRAPE GROWING

The autonomous community of Navarra is situated directly to the north-east of La Rioja. The wine region, Navarra DO, covers around half of this area, extending 100 kilometres (60 miles) southwards from Pamplona, although actual vineyard plantings are much lower than those of Rioja at 10,200 ha.³⁶ Its location and size mean there are many climatic influences including both the Atlantic Ocean and Mediterranean Sea and the Pyrenees to the north east.

The DO has five sub-regions. In the north of the DO, the hilly sub-regions of Baja Montaña, Valdizarbe and Tierra Estella run east to west. These are the cooler and wetter areas with influences from the Atlantic in the north west (though diffused somewhat by mountains to the north of Navarra) and from the Pyrenees in the north east. Ribera Alta in the middle of the region and Ribera Baja is in the south of the region are progressively warmer, drier and flatter.

GRAPE VARIETIES, WINEMAKING AND WINE STYLES

When compared to many other Spanish regions, Navarra grows a wide range of grape varieties. This is a relatively recent trend as, until around 40 years ago, by far the most planted grape variety was **Garnacha**, generally used to produce deep-coloured rosé wines. On the back of a government-funded research programme in the 1970s, it was decided that the DO should promote red wines made from **Tempranillo** (now the most planted grape), and later, in

the 1980s, the Consejo Regulador permitted international varieties such as Cabernet Sauvignon, Merlot and Chardonnay.

Of these varieties, Tempranillo is often made as a single varietal wine whereas Cabernet Sauvignon and Merlot are usually part of a red blend with Tempranillo and sometimes Garnacha. A range of styles are made from fruity, lighter-bodied, early drinking wines to fuller-bodied, more concentrated wines that will typically be matured in oak barrels for a year or more; the ageing categories of Crianza, Reserva and Gran Reserva are widely used. Both French and American oak are common, with French more typical for Cabernet Sauvignon and Merlot, and American more usual for Tempranillo. Chardonnay is the principal white grape and tends to show citrus and peach fruit, medium alcohol and medium to medium (+) acidity, being made in both unoaked and oaked styles. Moscatel de Grano Menudo (Muscat Blanc à Petits Grains), Sauvignon Blanc, Viura and Malvasía are also grown.



Vineyards in the Tierra Estella subregion

Views are mixed on whether such diversity is a benefit or whether Navarra should focus on a signature grape. A number of critics and producers feel that Garnacha is the grape with the highest quality potential in Navarra, especially from old bush vine plantings. When made as a single varietal red wine, Garnacha is able to make lighter bodied wines with red berry fruit and medium (+) acidity in the cooler Baja Montaña, Valdizarbe and Tierra Estella to fuller-bodied, more tannic examples in the warmer Ribera Baja.

Significant volumes of medium to deep coloured, dry rosé wines are still produced from Garnacha, sometimes in a blend with Tempranillo, Cabernet Sauvignon and Merlot, with the grapes sourced mainly from the cooler, more northerly sub-regions. Navarra DO wines must be made by a short maceration on the skins; direct pressing is not permitted. This maceration may typically last for 3–4 hours for paler-coloured wines and 6–12 hours for more deeply coloured versions. Most rosé is fermented in stainless steel and bottled soon after to retain red berry fruit flavours. Some producers choose to ferment and/or mature their wines in barrels.

Overall, the wines of Navarra range from good to very good quality, and occasionally outstanding. Without having the same prestige as the DO/DOCa wines of Rioja and Ribera del Duero, prices tend to be inexpensive to mid-priced, with some premium wines. Significant producers include Domaines Lupier and Bodegas J. Chivite.

As with neighbouring Rioja, this is a region of small vineyard holdings (although nothing like as small as found in Rías Baixas) and many growers sell their wines to co-operatives.

20.5. Aragon

There are four principal wine regions in the autonomous community of Aragon. Cariñena, Campo de Borja and Calatayud are in the west of Aragon, relatively near to the city of Zaragoza, whereas Somontano is to the north-east, close to the border of Catalunya and with a very different climate.

CARIÑENA DO, CAMPO DE BORJA DO AND CALATAYUD DO

Located far inland, these three DOs have warm continental climates with hot dry summers; maximum annual rainfall tends to be 450–500 mm. The vineyards are generally located on high altitude plateaus and slopes that moderate the daytime temperatures somewhat; 500–900 m for Calatayud, 400–800 m for Cariñena, and 350–700 m for Campo de Borja. The altitude also gives a high diurnal range and helps to retain acidity in the grapes. A cold wind called the *cierzo* blows from the north, which further moderates temperatures and leads to slower ripening.

All three DOs mainly produce red wines, with each having substantial plantings of old Garnacha vines, the principal variety. A lack of precipitation and rocky free draining soils means vineyards are generally made up of bush vines planted at low densities. The dry and windy conditions mean pests and diseases are rarely problematic; however, spring frosts can be an issue, reducing yields in some years.

Vineyard holdings are small and the number of wineries low, with co-operatives being the major producers. The majority of production is of high volume, inexpensive red wines for early drinking, which tend to be fermented at moderate temperatures in stainless steel and bottled soon after. The wines are generally medium to full-bodied with high alcohol, medium tannins and ripe red and black fruits.

However, a handful of small, quality focused wineries making very good wines from old-vine Garnacha are helping to transform the image of these DOs. These producers generally aim to showcase the quality of fruit from their vines and therefore, even for premium wines, the time in oak will be relatively limited, and larger barrels/vessels (500 L and bigger) or high proportions of old oak may be used. These wines often show concentrated raspberry and plum fruit, with subtle spicy notes from oak, medium (+) acidity, medium to medium (+) tannins and high alcohol. They are usually mid or premium priced.



Bush-vine Garnacha in Calatayud

SOMONTANO DO

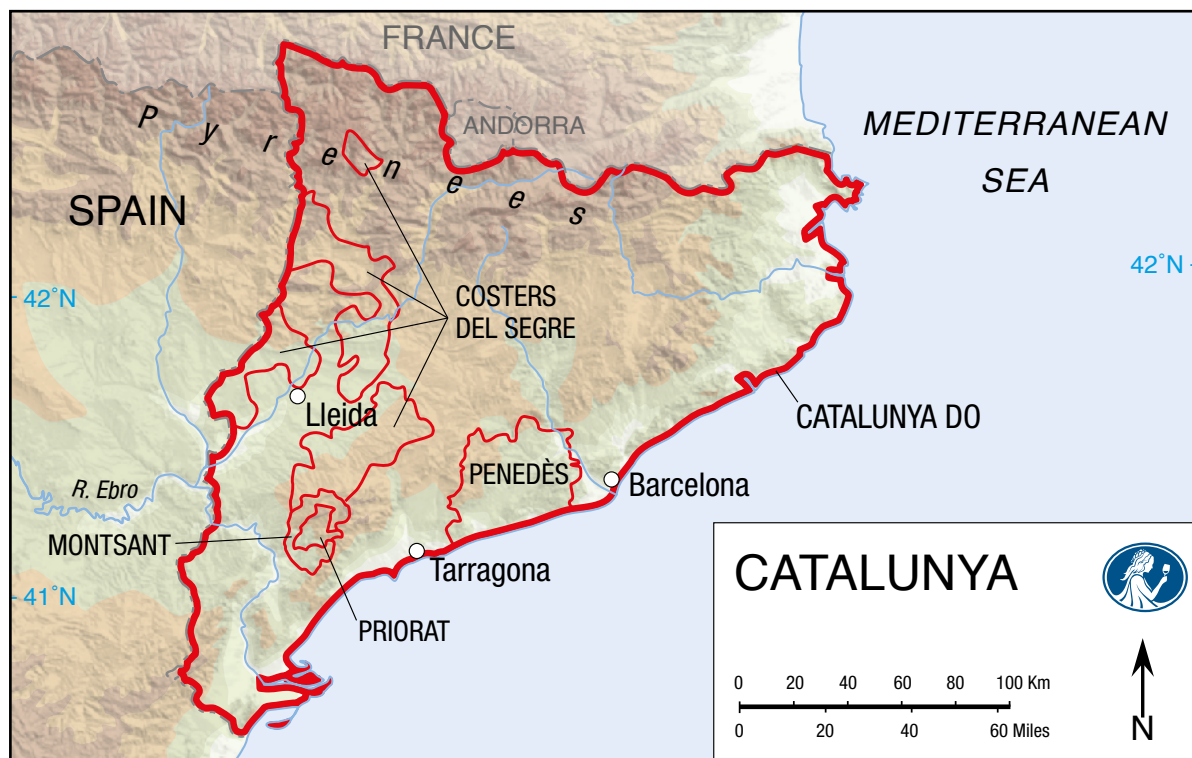
Set apart from the other Aragon DOs, Somontano is located at the foot of the Pyrenees. It has a warm continental climate, but rainfall is slightly higher than that in Cariñena, Campo de Borja and Calatayud and more evenly spread throughout the year. The vineyards are generally found at 350–650 m, the altitude of the highest vineyards slightly lowering daytime temperatures and giving a large diurnal range. Cold breezes coming down from the Pyrenees further moderate temperatures.

Somontano grows a wide range of grape varieties, with **Cabernet Sauvignon** and **Chardonnay** being the most planted. Unusual for a Spanish wine region, there are also significant plantings of Gewürztraminer.

External investment has been important for the development of Somontano. Until around 40 years ago there was only a handful of producers but now there are over 30.³⁷ The first investment came from a local bank which created a modern, high-technology winery, now known as Viñas del Vero. It is the largest producer in the region, and since 2008 owned by González Byass of Jerez. Barbadillo, also a Sherry producer, now own a major share of the co-operative.

The majority of wines from Somontano tend to be mid-priced, and are good or very good examples of the grape varieties from which they are made. The issue continues to be competition from the large number of other, perhaps better known regions across the world that also produce wines from the same grape varieties.

20.6. Catalunya



The autonomous community of Catalunya is located in the north east of Spain. Its eastern border is the Mediterranean coast and this proximity to the sea along with altitude inland are the major influences on the region's climate. Similar to Somontano and Navarra nearby, Catalunya grows a higher proportion of international varieties (generally coming from nearby France) than many other areas of Spain. It has also been at the forefront of changes to and innovations in grape growing and winemaking in the last few decades. Barcelona provides a large local market for the wines.

Catalunya has a total of 11 DOs and one DOQ, the most important of which are described below. Catalunya also has its own scheme for exceptional wines from single estates. Providing strict specifications are met, including a restriction on yields and a minimum length of time for the wine to be established in the market, these wines may be labelled **Vi de Finca**.

CATALUNYA DO

Catalunya DO applies to grapes grown anywhere in the autonomy of Catalunya. It is widely used, especially by the largest producers for their inexpensive and mid-priced wines (for example, Torres Viña Sol). Not only does it allow more freedom than other smaller DOs in terms of where grapes can be sourced and the range of international and local grape varieties that are permitted, but also Catalunya is a more widely recognised name in export markets than, for example, Penedès.

PENEDÈS DO

Penedès DO covers a diverse area of land stretching from the Mediterranean coast, just down from Barcelona, to the mountains inland and makes a range of various wine styles, including the sparkling wine, Cava.

The Growing Environment and Grape Growing

Overall, Penedès has a warm Mediterranean climate. However, the DO can be broadly divided into three zones with different topography and climatic influences. This climatic diversity allows the wide assortment of grape varieties permitted by the DO to be grown.

With 2,500 hectares, white grape varieties make up around 80 per cent of plantings.³⁸

Xarel-lo, **Macabeo** and **Parellada** are the most planted grape varieties of either colour and are used both for Cava, other local sparkling wine and for still white wines, often blended together. There are also sizeable plantings of **Chardonnay** and smaller amounts of many different varieties including Moscatel (both Muscat of Alexandria and Muscat Blanc à Petits Grains), Sauvignon Blanc, Gewurztraminer and Riesling. **Merlot** is the most planted black grape variety, followed by Cabernet Sauvignon, Tempranillo, Pinot Noir, Syrah and other permitted varieties.

The three climatic zones, running from the Mediterranean to further inland, are:

- **Penedès Marítim** lies between the sea and the coastal range of hills. Due to the low altitude and proximity to the sea it has a warm climate without temperature extremes. It is typically a source of full-bodied red wines from late ripening varieties such as Monastrell. Some Xarel-lo, Macabeo and Parellada is also grown here, generally for inexpensive still wines.
- **Penedès Central** lies on the relatively flat plains, known as the Pre-Coastal Depression, between the coastal range and the inland mountains. The vineyards are still at moderately



Trellised and bush vine vineyards in Penedès

high altitudes compared to Penedès Marítim, reaching up to around 500 m, providing some cooling influence. Large plantings of Xarel·lo, Macabeo and Parellada are found here, as well as Merlot, Cabernet Sauvignon, Tempranillo and Chardonnay.

- **Penedès Superior** is located at altitudes of 500–800 m in the inland mountains (between Montserrat and the Montmell). The altitude provides a cooling influence during the day and a high diurnal range but spring frost is often a problem. The cool conditions mean that white grape varieties such as Chardonnay and Sauvignon Blanc, as well as small amounts of Riesling and Gewürztraminer, are grown here, becoming ripe while retaining acidity. Pinot Noir is also grown in this area.

Rainfall is around 500 mm per annum with the driest period in the summer. Irrigation can be used if vines are suffering from lack of water but authorisation must be gained from the Consejo Regulador. The soils are generally loamy with some calcareous components, and generally can store enough water through the ripening period. A number of vineyards, particularly the largest, are trellised allowing mechanisation, but there are also many plots of bush vines.

Winemaking

Penedès was one of the first places in Spain to modernise its wine production practices in the 1960s and 70s, led by the example of Dijon-educated Miguel Torres (as described in the introduction to Spain). The introduction of temperature-controlled fermentation in stainless

steel meant Penedès quickly became known as a source of clean, fruity wines, both aromatic white wines and fruity, early-drinking reds. More expensive red wines and some Chardonnay will often be matured in oak, usually French. The wines are usually good to very good in quality, and inexpensive to mid-priced, with a number of premium wines.

Wine Law and Wine Business

In the last few years, Penedès, like a number of other Spanish DOs, has introduced more precise zoning of its vineyard area and ten subzones have been mapped based on geographical and cultural parameters. Wine producers are able to label their wines with a subzone providing certain specifications are met, for example, 100 per cent of the grapes used must come from vineyards in the subzone and have been grown organically.

25 per cent of the wines from Penedès DO are exported; the largest markets are Canada, Sweden and the USA.³⁹ Sales in Catalunya make up around 65 per cent of domestic market sales. Nearby Barcelona provides a major source of consumers as well as a hub from which wine tourists can easily visit the region.

PRIORAT DOQ

Priorat has a long history of winemaking, with Carthusian monks starting to plant vineyards and make wine in the 12th century. However, it is only in the last few decades that Priorat wines have received international recognition. A lack of easy access, challenging topography and some extremes of weather have always made viticulture in Priorat difficult and, at the end of the 19th century, the outbreak of phylloxera and growth of the textile industry in Catalunya caused many vineyards to be abandoned as local workers moved to find jobs nearer the cities. Wines only continued to be produced by the local co-operative and a couple of estates.

However, in 1989, a local producer, René Barbier, formed a small group of viticulturists and winemakers to collaboratively re-invigorate several specific vineyards and produce wines, blending in Cabernet Sauvignon, Syrah and Merlot with Priorat's local varieties, Garnacha and Cariñena. Using French-inspired winemaking techniques, such as maturation in French oak barriques, their wines (Clos Mogador, Clos Dofí, Clos de L'Obac, Clos Martinet and Clos Erasmus) had received, by the mid-1990s, much critical acclaim from some of the world's most esteemed critics, and were being sold at premium and super-premium prices.

From the late 1990s, the number of estates in Priorat increased dramatically, with 55 wineries in 2004 to 114 in 2021.⁴⁰ In 2009, Priorat was promoted from a DO to a DOQ.

The Growing Environment and Grape growing

Priorat has a warm continental climate. The region is protected from cold winds by the Serra de Montsant in the north and from much Mediterranean influence by the Serra de Llaberia to the south. The summers are hot, but with a high diurnal range giving cool nights, and the winters are very cold such that spring frosts can be a problem. Rainfall is typically 500–600 mm, falling mainly in heavy storms in the winter and spring, with summers being dry. Irrigation is permitted in the driest years and for the establishment of new vineyards.

The River Siurana runs through the region and the winding valleys carved by the river and its many tributaries give a broad range of altitudes (100–750 m) and aspects. The topography is extremely rugged and although the DOQ covers an area of around 17,600 ha, just over 2,000 ha are planted with vines, well below the area under vine before the phylloxera outbreak.

Many vineyards are on slopes, known as *costers*, ranging in gradient from 5 per cent to 60 per cent. Narrow terraces are also a common feature, helping to reduce soil erosion and allow rainwater to better infiltrate the soil, as surface run-off is reduced. In neither case can machines access the vineyards and therefore, in many vineyards, all operations are done by hand, increasing production costs.

The soils in the region are varied, largely poor and stony but with some outcrops of clay. The more common slate-based soils, known locally as *llicorella*, are thin, rocky and lacking in nutrients, with characteristic particles of mica reflecting both light and heat back onto the vines. The bedrock of slate splits into vertical layers and means that vine roots can grow deep in search of the limited water available. The low nutrient and water levels lead to low yields per vine, even more so for the many old vines in the area. Old vineyards are generally planted to low density with bush vines, whereas newer vineyards are often VSP trellised where the terrain makes it possible to do so; however, large areas of high-density plantings are rare, in general. Overall, average yields can be as little as 5–6 hL/ha,⁴¹ although the maximum permitted yield is 39 hL/ha. Such small yields necessarily have an implication on production costs and the price of the wines.

The traditional local grape varieties of **Garnacha** (37 per cent of the hectares planted) and **Cariñena** (27 per cent) still make up the majority of plantings.⁴² Both Garnacha and Cariñena are well suited to the hot days and dry conditions, with Cariñena particularly suited to harsh conditions and generally grown in the warmest sites. Cabernet Sauvignon, Syrah and Merlot make up the majority of the rest of the plantings. The popularity of these international varieties has begun to fall, and some producers use only Garnacha and/or Cariñena.

White varieties, predominantly Garnacha Blanca and Macabeo, make up just 7 per cent of plantings, and are used to make a small amount of white wine.⁴³



Terraced vineyards in Priorat

Winemaking

Winemaking ranges from very traditional, using old basket presses and large oak fermentation vats, to modern, with stainless steel tanks and optical sorting machines. Cultured yeasts are often used as the high levels of potential alcohol in the grapes means fermentation with ambient yeasts can be slow and last many weeks. The red wines are typically matured in oak, often French, usually for 1 to 2 years.

Quality-focused winemakers are typically aiming for freshness in terms of fruit character and acidity. With such warm conditions and low yields, it is not uncommon for the wines to be 14.5% abv and more, but in very good and outstanding wines, the high alcohol is balanced by concentrated, ripe, but not jammy, fruit with medium (+) acidity giving freshness.

Wines Law, Regulations and Wine Business

The local Consejo Regulador sets legislation regarding various grape growing and winemaking parameters. There are four classifications available are based on where the grapes are grown:

- **Vi de Vila** – Grapes must come from one of Priorat's 12 subzones. The name of the subzone and then 'Vi de Vila' appear on the label.
- **Vi de Paratge** – This category corresponds to grapes grown within a single *paratge* or named site, equivalent to a *lieu dit* in France. There are 459 *paratges* noted for their terrain, geology and microclimate. They cover the entire area of Priorat DOQ.
- **Vinya Classificada** – A wine from a single vineyard of particular merit within a Paratge, equivalent to a cru.
- **Gran Vinya Classificada** – A wine from a single vineyard of exceptional merit within a *Paratge*, equivalent to a grand cru.

To qualify for any of the specific classifications (Vi de Vila, Vi de Paratge, Vinya Classificada, Gran Vinya Classificada) producers must own the vineyard from which the grapes came or have rented the vineyard for a minimum of seven years. The classifications each have their own regulations in terms of the minimum proportion of Garnacha and Cariñena in the blend, vine age and maximum yields. Wines classified Vinya Classificada or Gran Vinya Classificada involve critical 'recognition' (as an outstanding wine brand) over a minimum of five years.

The Consejo Regulador also certify the use of the term 'old vines' providing the grapes come from vineyards that are a minimum of 75 years old or were planted before 1945.

MONTSANT DO

The Growing Environment and Grape Growing

Montsant DO forms almost a complete ring around Priorat DOQ. The majority of the vineyards are in the south of the region where the land flattens out to the lower valley of the River Ebro. The climate has a more Mediterranean influence here than in Priorat due to proximity to the coast (although the Serra de Llaberia does provide some shelter) and hence temperatures in both the summer and winter are not so extreme. Summers are generally warm and dry, with most rain falling in the winter and spring. There are also some vineyards in the more mountainous north of the region, with higher altitudes (300–700 m) and generally cooler temperatures.

A mixture of soils can be found, ranging from clay-based to sandy. There are some patches of llicorella particularly towards the south, whereas in the north and east, soils tend to have higher limestone content. In general, the soils are slightly more fertile than those of Priorat, and yields of grapes tend to be higher.

Montsant's vineyards are easier to work than those of Priorat. The topography is less extreme, particularly towards the south. A number of vineyards on slopes are terraced, which reduces erosion and helps to better retain water, as also practised in Priorat. Trellised vineyards are relatively common permitting mechanisation, though there are also vineyards planted to bush vines.

Grape Varieties and Winemaking

As in Priorat, black grape varieties dominate with 94 per cent of plantings, with two-thirds of those being **Garnacha** and **Cariñena**.⁴⁴ Unlike Priorat, Tempranillo is the next most planted grape, but there are also significant plantings of Syrah, Merlot and Cabernet Sauvignon. Although many of the wines from the area are blends, single varietal wines from Garnacha and Cariñena are not uncommon. It is typical for red wines to be matured for one to two years in French or American oak barrels. The style of wine depends on the grape varieties used, area of production and the producer, but generally the wines, particularly from the south, tend to be ripe, fruity and full-bodied with high alcohol. Medium (+) levels of acidity can provide freshness in wines made from grapes from the coolest areas and sites. Wines tend to be good to very good in quality and mid-priced with some premium and even super-premium examples. Significant producers include Espectacle and Celler de Capçanes.

A small proportion of white wine is made, generally from Garnacha Blanca and Macabeo.

Wine Business

Montsant has around 1,900 ha of vineyards, farmed by around 700 grape growers,⁴⁵ with wines produced by around 50 wineries.⁴⁶ Co-operatives account for the majority of production. Montsant was awarded DO status in 2001 and since then, the number of individual producers has grown considerably. A number of wine producers based in Priorat have ventures here, attracted by similar climatic conditions but cheaper land.

Forty per cent of production is exported, with Germany, United States, France, Switzerland and the United Kingdom being the most important export markets.⁴⁷

COSTERS DEL SEGRE DO

Costers del Segre is situated further north than other Catalunya DOs and currently consists of seven not entirely contiguous subzones. Relatively far from the Mediterranean coast, it has a continental climate with hot summers and cold winters. Average annual rainfall is low at 400 mm.

The region was first planted in the early 1900s by Manuel Raventós, who owned Cava producer Codorníu, but decades of establishment work were needed before the semi-arid land could support vines. The saline soils in the area were gradually improved and irrigation channels were installed. The Raventós' winery, Raimat, produced its first commercial vintage in 1978 and, based on the success of their first few vintages, the DO was established in the mid-1980s.

The region varies in altitude from 200–700 m, cooler sites at the highest altitudes are used for producing grapes for Cava, but also white varieties and early-ripening black varieties

for still wines. The soils are generally sandy and free draining and this, with the low annual rainfall, means irrigation is needed in most vineyards.

A wide range of both international and local varieties are permitted, including Macabeo, Parellada and Xarel-lo (much of which is used in Cava production), Chardonnay, Garnacha Blanca and Sauvignon Blanc for white wines, and Garnacha, Tempranillo, Cabernet Sauvignon and Merlot for red and rosé wines. Single varietal wines can be found but blends, often using a combination of international and local varieties, are common.

The wines are generally made in a fresh, fruity style for early drinking. The red wines and some Chardonnay wines may be aged in French or American oak, and producers are tending to use less new oak than in the past. The wines are usually mid-priced with a few premium examples.

The DO is made up of around 4,000 ha of plantings,⁴⁸ with Raimat owning around a third of the land.⁴⁹ In 2021, there were 36 wineries. Aside from Raimat, significant producers include Castell d'Encus.

20.7. Valencia and Murcia

The autonomous communities of Valencia and Murcia are located on or close to the eastern to south-eastern coast of Spain. Depending on their exposure to the coast, the wine regions have either Mediterranean or continental climates, all with hot summers and low rainfall. Given the climate, many vineyards are planted with bush vines at low density, but there are also some vineyards trellised with VSP. A large proportion of inexpensive wine, often sold in bulk, comes from the area. However, there is an increasing number of producers making very good quality wines that can sell at premium prices.

VALENCIA DO

Valencia DO is the largest DO in the autonomous community of Valencia with 13,000 hectares under vine. The vineyard area is split into two non-contiguous areas and includes a number of smaller subzones. It produces around 650,000 hL per annum.⁵⁰

In general, the area has a warm Mediterranean climate, with cooling influences that either come from altitude or proximity to the coast. Rainfall is low at 450 mm and irrigation is widely used.

The Alto Turia subzone is located in the southern foothills of the Sistema Ibérico mountain range in the upper valley of the River Turia. At altitudes of 700–1,100 m, it is the coolest area and almost exclusively produces white wines, most notably from Moscatel de Alejandría and Merseguera. When its high vigour is not controlled, Merseguera makes wines with low intensity aromas and is often found blended with other, more characterful varieties. Wines made from dry farmed vines grown at high altitudes in VP El Terrerazo (owned by Bodega Mustiguillo) can show more concentration and texture, particularly when matured in oak.

At altitudes of 200–650 m, the Valentino subzone is warmer than Alto Turia, but is cooled somewhat by sea breezes. This subzone grows a diverse range of local and international varieties, such as Garnacha Tintorera (Alicante Bouschet), Tempranillo, Cabernet Sauvignon and Monastrell for red and rosé wines, and Merseguera and Macabeo for white wines. A similar range of grape varieties is also grown in the Clariano subzone to the south of Valencia,



Moscatel vines in Valencia

whereas the Moscatel subzone, just inland from Valentino, concentrates on producing the sweet wine Moscatel de Valencia and *vino de licor* (unfermented grape must that has been fortified with grape spirit) from Moscatel de Alejandría grapes.

The vast majority of the wines (85 per cent)⁵¹ is made by local co-operatives in a fruity style for immediate consumption. They tend to be acceptable to good in quality and inexpensive in price. A number of individual producers, whether owning their vineyards or buying in grapes, are producing good and very good quality wines, that tend to be mid-priced. A few producers are working with little-grown local varieties that can provide a point of difference on both the domestic and export markets.

UTIEL-REQUENA DO

Utiel-Requena is located inland from the northern part of Valencia DO, with its western limit bordering La Mancha. It comprises 33,000 ha and has a continental climate with hot summer days and very cold winters. The average altitude is relatively high at 750 m, and this promotes cooler summer nights, but also the risk of spring frost. Rainfall is low at around 450 mm.

Approximately 87 per cent of the vineyard area is planted to black varieties. The most planted grape variety is **Bobal**, with 70 per cent of plantings,⁵² many of which are over 40 years old. This grape variety is well suited to the region, being mid- to late budding (and therefore usually avoiding spring frosts), very drought tolerant and, despite the hot climate, able to retain acidity. However, it can ripen unevenly and hence the lack of ripeness in some bunches, can mean its tannins can be a little grippy, even firm. Bobal can be vigorous and high yielding, but this is kept in balance by producers looking to make high quality wines. It also gives high levels of colour and, for this reason, it has been, and still is, used as a blending component in inexpensive wines that lack concentration.

Bobal's high acidity and fruity nature means that it was originally best known for rosé wines although, nowadays, it is mainly used to produce red wines. These range in style from relatively light-bodied, medium-tannin styles, often made by semi-carbonic maceration, to concentrated wines, with medium (+) tannins, medium (+) to full body, high acidity and flavours of blackberry, black cherry and often notes of chocolate. The latter are often made from old vine fruit and matured in oak to increase complexity. The wines are usually acceptable to very good in quality, and inexpensive to mid-priced; two-thirds of the wine was exported in 2021.

ALICANTE DO

Alicante is a non-contiguous DO and the most southerly one in the autonomous community of Valencia, located near the coast around the city of Alicante. It is the smallest of Valencia's DOs with around 9,000 ha under vine.⁵³ However, wine from grapes from some vineyards within neighbouring Jumilla and Yecla in Murcia are permitted to be labelled DO Alicante.

Generally, the region has a Mediterranean climate with hot summers and mild winters. The growing season is extremely dry with an average of 250 mm of rainfall per annum.

The main centre of production is the zone of Vinalopó to the west of the DO, which stretches from the coast inland to vineyards at around 500 m near the Sierra de Salinas. The main grape here is **Monastrell**.

In the north east of the region, on the coast, the zone of Marina Alta experiences humid breezes and receives most rain (around 500 mm per annum). **Moscatel de Alejandría** is the key grape variety here, producing both dry and sweet wines.

Like Bobal in Utiel Requena, Monastrell is also well suited to the hot, dry climate being late ripening, able to retain acidity and drought tolerant (see The Rhône Valley: [Mourvèdre](#) for more details). It constitutes 75 per cent of plantings in the DO.⁵⁴ Vineyards tend to be planted at low density with bush vines.

Red wines labelled Alicante DO must include at least 80 per cent of Monastrell in the blend. Other varieties typically blended are Alicante Bouschet, Garnacha and Bobal. The general style is full-bodied, dry wines with high alcohol, high tannins and ripe black fruit flavours. Maturation in oak, usually American, is common. Some producers are aiming for fresher fruit characters and lower or medium levels of alcohol. The wines are generally good to very good in quality and mid-priced, with some premium examples.

Fondillón is a historic wine style, protected by the DO, and still made by a few producers. It is a medium-sweet red wine, with a maximum of 40 g/L residual sugar, made from late-harvested Monastrell; this is possible due to low rainfall, even in autumn. The minimum alcohol level is 16% abv and this should come solely from the grapes with no fortification allowed. It must be matured for a minimum of 10 years in oak, often in traditional old oak vessels of 1,200 L. Wines can either be *añada*, the product of one year, or, more typically, made by a solera system, blending younger and older wines. The wines tend to be oxidised in character, showing flavours of dried fruit and nuts.

JUMILLA DO

Jumilla is located in Murcia on an area of flat plains and wide valleys between Alicante in the east, and La Mancha in the west. It has a warm continental climate with hot summers and cold winters. Altitude ranges from 400–800 m, providing a cooling influence and large diurnal range in the highest sites. There are around 25,000 ha of vine plantings.⁵⁵



Bush-vine Monastrell planted on sandy topsoil in Jumilla

Annual rainfall is extremely low, between 250–300 mm. However, the soil, generally sand over a layer of limestone, which aids the retention of ground water, makes grape growing viable and many vineyards are not equipped with irrigation.

The dominant grape here, **Monastrell**, making up around 70 per cent of plantings, is also well suited to low rainfall and extreme heat.⁵⁶ During most of the 20th century, Jumilla was solely a producer of inexpensive wines sold in bulk. However, in 1989,⁵⁷ the region was devastated by phylloxera, and after that, a significant proportion of vines were grubbed up and replanted. This was a chance to use virus-free vines and higher-quality clones of Monastrell than had been previously planted, and this together with improved vineyard management and winemaking techniques (including earlier harvesting and cooler fermentation temperatures), has led to a steady improvement in quality. There is still a proportion of old vines that were not affected nor grubbed up and can produce low yields of high-quality fruit.

Red wines from Monastrell are generally full-bodied with high alcohol and flavours of ripe blackberry and cherry fruit and spice from maturation in oak. In very good examples, ripe concentrated fruit is balanced with medium (+) acidity. Other black grape varieties permitted in the DO are Cencibel (Tempranillo), Garnacha Tintorera (Alicante Bouschet), Garnacha, Cabernet Sauvignon, Merlot, Syrah and Petit Verdot. They are often blended with Monastrell to lower the wine's tannin levels. The DO also makes rosé wines, often from Monastrell, and a very small proportion of white wine.

The region is made up of 2,000 grape growers and approximately 40 wineries, including co-operatives. High volumes of inexpensive wines form the majority of production in the DO, though made to a better quality now than in previous decades. There are also several producers focused on making wines of very good quality that sell at premium prices. Examples include those from Bodegas El Nido and Casa Castillo. The majority of wines from the DO, and certainly the most expensive ones, are sold on export markets.

YECLA DO

Yecla is located between Jumilla and Alicante, with around 6,000 ha under vine. It has a very similar climate to Jumilla, though with slightly more moderation from the Mediterranean. Altitude is also a cooling influence here, with vineyards from 500–900 m. Rainfall is low at around 300 mm per annum.

The soils are also similar, a mixture of sand with limestone, helping to retain water. Likewise, the same black grape varieties are permitted, with **Monastrell** the dominant variety planted. Wines are made in a similar style to Jumilla, are generally good to very good quality and are inexpensive to mid-priced, with some premium examples.

Making both bulk and bottled wines, the co-operative La Purísima is responsible for around 60 per cent of the DO's total output.⁵⁸ Approximately 95 per cent of the Yecla's production is exported.⁵⁹

20.8. Castilla-La Mancha

Castilla-La Mancha is a large autonomous community to the south and south east of Madrid. The region is totally landlocked and is located on southern part of Spain's *meseta* (plateau) giving an extreme continental climate.

LA MANCHA DO

At 155,000 ha, La Mancha is the largest DO in Spain, and largest PDO in Europe. It is located on the large, relatively flat *meseta* at 500–700 m altitude. The climate is continental with extremely hot summers and maximum temperatures up to 45°C (113°F). Winters are very cold and can reach down to –20°C (–4°F). Rainfall is low at 300–400 mm. Limestone and chalk within the soils can help in the retention of water but drip irrigation is relatively common, with an estimated 40 per cent of vineyards being irrigated.⁶⁰

Planting densities are low, sometimes as little as 1,000 vines per ha for bush-trained vines without irrigation. Irrigated, trellised vineyards are planted at around 3,000 vines per ha.

The grape variety with the largest vineyard area is **Airén**, with around 90,000 ha. This neutral white grape variety is usually fermented in stainless steel to make a low-intensity, medium-acidity white wine for early consumption. However, much of its production is transported south for distillation into Brandy de Jerez.

Tempranillo, here called **Cencibel**, is the most planted black grape variety. It is made most often in a fruity style with short contact with oak, though Crianza, Reserva and Gran Reserva wines can be found.

In 2021, there were 14,000 grape growers and 241 wineries.⁶¹ Co-operatives make up the majority of production; Virgen de las Viñas in Tomelloso is not only the largest co-operative in La Mancha but in all of Spain, with 2,000 members farming 20,000ha.⁶²

The wine produced is sold as bulk or bottled, with approximately 38 per cent exported (average 2017–2021).⁶³ In terms of bottled wine, exports to the Chinese market have grown rapidly over the last few years. The top export markets in 2021 by volume were Germany, China and Japan.

VALDEPEÑAS DO

Valdepeñas is located to the south of La Mancha, and has a similar continental climate with hot, dry summers. It is mainly known as a source of red wines from **Cencibel** (Tempranillo),

with ripe red fruit, soft tannins, medium acidity and spice from oak. The wines tend to be good quality and inexpensive or mid-priced.

VINO DE PAGO

Castilla-La Mancha is home to nine of Spain's 18 Vinos de Pago (VP). The first in Spain, and perhaps the most well-known in the region, is the Dominio de Valdepeña, producing wines from Cabernet Sauvignon, Syrah and Petit Verdot.

CASTILLA VT

This Vino de la Tierra covers a vast area of the autonomous community of Castilla-La Mancha. It encompasses both La Mancha DO and Valdepeñas DO as well as some others, which cover around half of its area. Climate and soil are similar to these two DOs. A large range of local and international grapes are permitted, wider than allowed in the DOs. The wines are generally inexpensive to mid- priced.

20.9. Other Spanish Regions

THE BASQUE COUNTRY

The autonomous community of the Basque Country (also known as Euskadi or País Vasco) stretches along much of the north coast of Spain. The main vineyard areas are split in two by the Cantabrian *cordillera*. In relatively sheltered conditions to the south are the vineyards of Rioja Alavesa (see [Rioja](#)). In the north, around Bilbao and San Sebastián, are the three DOs that make Txakoli.

Unsheltered from the influences on the Atlantic, the **Txakoli** (or Chacoli) DOs have a moderate, maritime climate. Rainfall can be as high as 1600 mm per annum, and hence keeping the canopy well ventilated is a major concern to avoid fungal disease.

The main white grape variety for dry wines is Hondarrabi Zuri. Fermented cool in stainless steel and bottled and released a few months later, these wines have high acidity, medium (–) body, often low alcohol and fresh apple, pear and lemon flavours, sometimes with a slight spritz. Some producers are making examples with more texture and complexity, either using



VSP trellising aids air circulation in the canopy reducing the risk of fungal disease.

lees contact, oak maturation (usually old wood or only a small proportion new) or bottle ageing before release.

Although the vast majority of production is dry white wines, rosado, red, sweet whites and sparkling wines are all made.

SIERRA DE GREDOS

The Sierra de Gredos is the mountain range to the west of Madrid. It does not have its own denomination of origin for wines and, depending on the location of the vineyard, the wines may be labelled as Vinos de Madrid DO, Mentrída DO (within Castilla-La Mancha), Cebreros DO or Castilla y León VT.

The area used to produce inexpensive, high volume wines until relatively recently, but a number of new producers have since set up, focused on quality rather than quantity.

The wines are mostly made from old vine Garnacha, at altitudes of 600–1200 m. Located in the centre of the country, the climate is continental but altitude provides a cooling influence and the diurnal range is high, helping to retain acidity and fresh fruit flavours. The style of Garnacha is notably different from many of those made in Aragon; lighter in tannin, with medium (+) acidity and fresh strawberry and cherry fruit. Given the sunny, warm days, alcohol levels can still be high. Many of the wines are made in a low intervention manner, using ambient yeasts and low levels of sulphur dioxide. They are typically good to very good in quality and are mid- to premium priced.

The most common white grape variety is Albillo Real, producing full-bodied wines with citrus and floral notes and medium to medium (+) acidity. Fermentation techniques vary, some wines being fermented and/or matured in oak, others fermented on their skins.

THE ISLANDS

Although better known as popular tourist destinations, in recent years both the Balearic and Canary Islands have become recognised as sources of high-quality wines from local grapes little seen elsewhere in the world.

The **Balearic Islands** (Mallorca, Menorca, Ibiza and Formentera) are located 95 kilometres (60 miles) from the eastern coast of Spain. The island of Mallorca has two DOs, with a number of VTs spread amongst the other islands. The key local grapes include Manto Negro (light coloured, high alcohol, red fruit flavours) and Callet (medium to medium (+) acidity, medium alcohol, red fruit flavours).

Monastrell, Tempranillo and Malvasía are also commonly found, as are international varieties such as Cabernet Sauvignon, Merlot, Syrah and Chardonnay. Blends of grape varieties are common.

The **Canary Islands** are located off the coast of Morocco, and around 500 kilometres (310 miles) south of the island of Madeira. At a latitude of 28°N, there is a tropical influence on the climate, with hot and humid conditions in the growing season. Many of the islands are mountainous and vineyards can be found at altitudes up to 1,500 m, leading to cooler days and wide diurnal ranges. The topography is rugged, making mechanisation impossible. The range of altitudes and aspects means a variety of white and black grape varieties can be grown, without the need for grafting as phylloxera is not present here.

Each island has its own DO and Tenerife, the largest island, has five. Here, the most common grapes are Listán Negro, Malvasía and Listán Blanco (Palomino), though a wide variety of Iberian grapes is grown and field blends are common. Listán Negro is light

to medium bodied, with medium tannins and flavours of raspberry and plum. Carbonic maceration is often used on Listan Negro to make fruity, early-drinking wines, but some undergo traditional fermentation and may be aged in oak.

The viticulture of Valle de Orotava DO in Tenerife is very distinctive, with several vines twisted together to form long ‘ropes’, trained on low wires and growing up and down the hillsides.

The island of Lanzarote has growing conditions dissimilar to those of the other islands. Here, the topography is relatively flat, and the land is covered with a layer of dark volcanic ash. Grape growers plant vines in craters dug into the ash and partially surrounded by stone walls to protect the vines from winds and to capture any moisture available. This leads to very low-density planting and low yields. Malvasía is the dominant grape variety and is made in both dry and sweet styles.

References

- 1 2021 data. [State of the Vitiviniculture World Market April 2021](#), OIV (retrieved 10 March 2023)
- 2 Five-year average taken from 2013–2017 data. [State of the Vitiviniculture World Market April 2021](#), OIV (retrieved 10 March 2023)
- 3 Vineyard survey 2020, Table 5, Spanish Ministry of Agriculture (retrieved 10 March 2023)
- 4 Data from the Spanish Wine Market Observatory (OEMV). Personal communication, ICEX Spain Trade & Investment, personal communication, email 27 March 2023
- 5 As above
- 6 As above
- 7 As above
- 8 As above
- 9 [About us](#), DO Rías Baixas (retrieved 14 March 2023)
- 10 As above
- 11 [Export performance](#), DO Rías Baixas (retrieved 14 March 2023)
- 12 [Grape varieties](#), CRDO Bierzo (retrieved 14 March 2023)
- 13 As above
- 14 Centelles, F., 2017, [Bierzo Explained](#) JancisRobinson.com (retrieved 14 March 2023). Subscription required.
- 15 All data from [Statistics](#), CRDO Bierzo (retrieved 14 March 2023)
- 16 [La DO Bierzo inicia el proceso de zonificación con la aprobación del nuevo etiquetado](#), Bierzo DO (retrieved 14 March 2023)
- 17 Centelles, F., 2017, [Toro – some real finds](#) JancisRobinson.com (retrieved 14 March 2023). Subscription required and [Tinta de Toro](#), D.O. Vino de Toro (retrieved 14 March 2023)
- 18 Centelles, F. (2017) [Toro – some real finds](#) JancisRobinson.com (retrieved 14 March 2023). Subscription required.
- 19 Radford, J. 2004, *The New Spain*, London, Octopus Publishing Group Ltd.
- 20 [History](#), DO Toro (retrieved 21 March 2023)
- 21 [Press kit](#), DO Toro (retrieved 20 March 2020, no longer available)
- 22 Centelles, F., 2016, [Ribera del Duero Analysed](#) (retrieved 21 March 2023) Records of vineyard plantings also show that vineyard area increased from around 6,500 ha in 1985 to 20,000 ha in 2005
- 23 [Vineyards](#), DO Ribera del Duero (retrieved 8 June 2023).
- 24 [Statistics](#), DO Ribera del Duero (retrieved 8 June 2023)

- 25 As above
- 26 Personal communication, DO Ribera del Duero, email, March 2020
- 27 Personal communication, DO Rueda, visit to region, November 2017
- 28 [Statistics](#), DO Rueda (retrieved 14 March 2023)
- 29 As above
- 30 Personal communication, DO Rueda, visit to region, November 2017
- 31 [Annual report 2022, Control Board of the Rioja Designation of Origin](#), Rioja Denominación de Origen Calificada (retrieved 17 March 2023)
- 32 All grape variety statistics are taken from [Rioja in figures, 2020 statistics](#), Rioja Denominación de Origen Calificada (retrieved 17 March 2023)
- 33 As above
- 34 As above
- 35 As above
- 36 [DO Navarra](#), Vinos D.O. Navarra (retrieved 17 March 2023)
- 37 [Our Wineries](#), DO Somontano (retrieved 17 March 2023)
- 38 2022 data. DO Penedès, private communication, email 12 April 2023
- 39 Priorat, *Oxford Companion to Wine* 4th Edition
- 40 [General data file](#), DOQ Priorat (retrieved 17 March 2023)
- 41 [Press kit](#), DOQ Priorat (retrieved 17 March 2023)
- 42 As above
- 43 [Dossier](#), DO Montsant (retrieved 20 March 2020)
- 44 Centelles, F., 2014, [Montsant – half-price Priorat?](#) (retrieved 17 March 2023)
- 45 [Dossier](#), DO Montsant (retrieved 17 March 2023)
- 46 [Qui Som](#), DO Montsant (retrieved 17 March 2023)
- 47 [Dossier](#), DO Montsant (retrieved 17 March 2023)
- 48 [Our numbers](#), The DO, Costers del Segre DO (retrieved 17 March 2023)
- 49 Costers del Segre, *Oxford Companion to Wine* 4th Edition
- 50 [PDO Valencia](#), Valencia DO (retrieved 21 March 2023)
- 51 As above
- 52 [Dossier de prensa](#), DO Utiel Requena (retrieved 17 March 2023) and private communication, email 12 April 2023
- 53 [DO Alicante](#) (retrieved 12 April 2019, no longer available)
- 54 [Varieties: Monastrell](#), DO Alicante (retrieved 17 March 2023)
- 55 [Estadísticas](#), DO Jumilla (retrieved 17 March 2023)
- 56 [Variedades de uvas](#), Jumila DOP (retrieved 17 March 2023)
- 57 Some sources say 1988
- 58 [Wine Export](#), La Purisma (retrieved 17 March 2023)
- 59 [Presentation](#), DO Yecla (retrieved 20 March 2023)
- 60 [D.O. La Mancha in figures 2021](#) D.O. La Mancha (retrieved 17 March 2023) and Castilla-La Mancha, *Oxford Companion to Wine* 4th Edition
- 61 [Mapa y estadísticas](#), La Mancha DO (retrieved 17 March 2023)
- 62 [About](#), Virgen de las Viñas (retrieved 17 March 2023)
- 63 [Mapa y estadísticas](#), La Mancha DO (retrieved 17 March 2023)