





## Limniona

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### In a nutshell

Once battling extinction, **Limniona** (Lim – ni – O – na) is enjoying a resurgence nowadays, with a steady increase of interest in Thessaly, Central Greece, which is regarded as its birthplace and in other Greek viticultural regions. ?t was planted in just 15 ha in 2011 (*Stavrakas, Ampelography 2010*), with current plantings **hovering around 30 ha**. To understand the variety better, we interviewed some top producers for Limniona: Christos Zafeirakis, Thanos Dougos, and Nikos Karatzas, which provided most of the valuable information cited within this article.

It is a red variety that is both elegant and powerful. ?ntensely coloured, it has aromas of strawberry and raspberry, herbal and floral notes (roses or violets) and sweet spices with a peppery twist. The silky rather than velvety tannins and **its lively perfumed character** are characteristic of this variety. It is also made as a rosé wine with great success, while in 2022, a sparkling 100% Limniona will be released made by the traditional method.

**Limniona might be the Greek equivalent of a Beaujolais Cru, Moulin a Vent or Morgon - structured at its best.**

## The name

Limniona in Greek is the female form of nouns, and that's the way most producers refer to the variety. However, some producers, like the winery Monsieur Nikolas, prefer to call it with a male name: Limnionas, written as such on the labels.

Adding to the confusion, there is another Greek red grape called **Limnio**, and the two names are often used interchangeably between the two varieties. Nevertheless, DNA profiling and ampelographic characteristics show two wholly distinct and unrelated varieties (*Oxford Companion to Wine*).

## History

According to Stavrakas, Limniona was recorded in **Messenicola** in Karditsa, Thessaly and is found in the broader Thessaly (Tyrnavos, Larisa, Karditsa).

At the beginning of the 90s, the Greek Wine Institute promoted plantings of this variety in Thessaly since it was an indigenous grape. Still, even after that, plantings were scarce, and in "The Wines of Greece" by Lambert-Gocs, there is no reference to Limniona other than that it's a synonym to Limnio.

Traditionally producers blended Limniona with Xinomavro and other reds, and winemakers showed little interest in producing a single-varietal wine. However, **2007 was a turning point due to Christos Zafeirakis as it was the first time single-varietal Limniona wines reached the market**. Since then, producers all over Greece, from Amyndeio in the north to southern Peloponnese, are focusing on the variety.

## Viticultural Characteristics

Limniona is a late-ripening variety, and for this reason, it is well suited for the long growing season of Central Greece and Thessaly. Even under warm or the hot conditions of Thessaly grapes rarely reach full maturity before the end of September or beginning of October (*personal communication with Professor S. Koundouras*). Budbreak in Tyrnavos is in mid-April, and harvest is at the end of September. Rainfall in Thessaly, the place of origin for the variety, is low (200 – 270 mm/year) (<http://climatlas.hnms.gr/> [1]), and Limniona indeed shows little need for water. Despite this, producers like Zafeirakis prefer plots with irrigation capacity since the sandy soils of the Tyrnavos have very little water holding capacity.

Disease sensitivity seems to vary depending on the vineyard, with some producers mentioning oidium as a threat, while others report no problems. The grapes' thick skins are perhaps providing some protection against oidium attacks. However, everyone seems to agree that downy mildew and botrytis are the main viticultural enemies of the variety. Both of these fungal diseases require water droplets to develop, and the compact conical bunches of Limniona retain droplets and don't allow them to dry fast enough, increasing sensitivity.

Limniona is a vigorous variety. Planting it in locations with little rainfall prevents fungal diseases and reduces vigour. According to winemaker Nikos Karatzas, the main target of the viticulturist during the growing season is to reduce its vigour. This is done by shoot trimming, controlled irrigation and fertilisation, and leaf removal. Nonetheless, the variety is susceptible to sunburns, so it requires cautious handling of the leaves of the bunch zone. Therefore, it's essential to adjust the green pruning and the leaf removal based on vintage conditions and the needs of the individual plot. The vigour of the variety is not only limited to the canopy but is also expressed as high fertility, with some vineyards reaching 140 hl/ha, even with short spur-pruning. Then again, green harvest is often employed to bring it closer to 70 hl/ha. Conversely, in older vineyards without irrigation, production is almost half of that, according to producer Thanos Dougos.

## Clones

Despite being overlooked for most of the modern Greek wine history, there are a few old vineyards still producing wine today. These have been the source for the cuttings used to plant the new vineyards, but they also serve as a source of genetic diversity for the variety. The Hellenifera project is working on two clones (uncertified for the moment) for Limniona. Domaine Zafeirakis is one of the commercial vineyards testing these new clones, and they

have experienced a deeper colour and faster technological ripening. The more rapid technological ripening is highly important for this variety even under climate change conditions (*personal communication with Professor S. Koundouras*).

## Terroirs

### Thessaly

Thessaly is the region where Limniona is mainly found, but plantings are concentrated in the west in **Messenikola** and towards the north, in **Meteora**, **Tyrnavos**, and **Rapsani**. All these areas have something in common: they're located in the rain shadow of the Pindos Mountain range located directly to the west (<http://climatlas.hnms.gr/> [1]). Very little rain falls during the year, with less than 400 mm, although it increases slightly with altitude. The commonality of all these regions is the poor character of their soils, which are sandy and rocky, with little water and nutrient retention. These soil attributes are one of the ways producers try to balance the high vigour of the variety.

Tyrnavos is the warmest of all three areas because the vineyards are located near the valley floor and have low elevations. The plain of Larissa is the largest in Greece, and due to only small gaps in the mountains to the east, the cooling sea breezes don't reach it. This makes it one of the warmest areas in Greece, but Limniona can handle the heat stress since it ripens in September, which is noticeably cooler. Soils are generally poor and sandy, with little water retention, so irrigation is an ordinary (and perhaps necessary) practice in the area. Similar to the climate of Tyrnavos is that of **Meteora**. In Meteora, located more inland, the climate is more continental, and the daily range is higher.

**Messenikola**, another continental climate region, is cooler than Meteora since altitudes are higher, starting from 400 m. Temperatures are also mitigated from the artificial lake Plastira located in the area. Finally, some of the cooler Limniona vineyards are found in **Rapsani**. The climate of Rapsani is much more influenced by the sea than those located in the west, and the high diurnal range which results in fresh wine styles is a result of altitude, not continentality.

### Outside of Thessaly

You can find Limniona just to the north of Thessaly, on the other side of Mount Olympus and the continental area of Amyndaio. Limniona is also located sporadically in parts of Central Greece like Viotia and southern Peloponnese, in Monemvasia. The climate of these regions shows similarities to the birthplace of the variety, Thessaly. Yearly rainfall is low, and the soils are poor. Nonetheless, the most significant difference is the cooling influence of the Aegean sea that Limniona enjoys in these regions.

## Oenological Characteristics

### In General

Limniona has high anthocyanin content giving wines with a rich red colour that remains stable over time (*Stavrakas, Ampelography 2010*). While its thick skins may make some weary, it has firm tannins, they're instead soft, and the wines don't require a long ageing time before consumption.

Nevertheless, tannins provide a strong antioxidant capacity in the wines, and Limniona seems prone to oxidation, which all interviewed winemakers agreed upon. Reducing the oxygen intake of red wine is challenging for the producers but not unachievable, as the wines pure and bright red fruit nose showcases. Despite the sensitivity to oxygen, many producers, like Zafeirakis and Karatzas, prefer to work with lower free and total SO<sub>2</sub> levels (3.5 pH and 60ppm total SO<sub>2</sub>) and instead employ other techniques to prevent oxidation.

### Red winemaking

The late harvest of Limniona at the end of September means ripening happens outside the warmest summer months. But this doesn't mean that the variety can't achieve perfect ripeness since harvest occurs when potential alcohol levels are from 13% to 15.5%!

Typically, the grapes are destemmed before pressing and vinified, commonly in large open vats, with maceration lasting 20-25 days. Still, wineries like Dougos and Oenops work with **whole cluster fermentation**, giving the wines a fresher, more playful character. The percentage of the whole bunch varies from 15 to more than 50 per cent, with

the most critical deciding factor – despite the style – being stem ripeness. Many producers note that fermenting spontaneously works well with the variety and promotes the individuality of the wines. Malolactic fermentation follows, and the resulting wines have a pleasant and balancing total acidity of about 6g/L.

After vinification, the wines mature in oak, and most winemakers prefer old oak to age Limniona, as they focus on creating fruit-forward wines. Limniona wines are also following the recent ageing trend in earth-based vessels like amphorae, avoiding any wood flavours from the wine. Time in the barrels depends on the producer and varies from 7 to 15 months. After bottling, the wines are generally ready for consumption, but that doesn't mean they can't age for many years.

### Rosé Winemaking

Almost every producer that makes red Limniona also produces a rosé version. Limniona is perhaps one of the best Greek varieties to make rosé wine from since tannins are soft and the colour is intense. Colour ranges from the lighter "Provence style" to darker and more traditional. Skin contact can be minimal or last several hours, depending on the style.

The grapes are harvested earlier than red wines, with about 12.5 to 13% potential alcohol. Acidity is also higher and much appreciated in rosé wines. Lees stirring helps create a lovely wright on the palate. The rosé Limniona wines are matured in tanks, preserving their freshness and elegant aromas of red fruits, like strawberry and cherry, and white flowers.

### Sparkling winemaking

The producers so appreciate Limniona that every possible style is made. This includes traditional, and Charmat method sparkling rosé wines! These mostly come from the cooler Amyndeio region. There Domaine Karanika blends Limniona and Xinomavro, but other producers are also trying the potential of the variety in its sparkling version, like the "Prologue" sparkling wine of Zafeirakis made with the traditional method.

## Trends

The rise of Limniona is seen by the growing number of producers who work with it to make single varietal wines or even put the name on the label if the wine is a blend. To this day (Jan 2022), 17 Greek wineries produce at least one wine, including the Limniona grape. The vineyard area is also increasing in the classic (if we can call them that) regions and in different locations around the country. At the same time, the prices of grapes are rising, as do the prices of the bottles. As a result, most Limniona wines on the market cost more than 10 euros, and 7 (out of the 17) wineries have single varietal Limniona wines retailing above 20 euros! This trend is driven by higher market demand and the increasing know-how of the producers both in the vineyard and the winery, which allows them to improve the quality every year.

The styles of Limniona have also shifted over the years. In the beginning, virtually all wines were blends, and then the single varietals emerged made with classic red vinification. More recently, wines are starting to become lighter, including whole bunches and the production of rosé and sparkling wines. All the different styles create wines that can be drunk all year round, and the **reds are almost always best enjoyed slightly chilled**. Limniona is a red variety that perfectly pairs with Greek summer!

However, Limniona enjoys success in Greece and many export markets, notably the UK, USA, and Belgium. This is partly due to the consistent quality the variety gives, and as a result, for some producers, Greece is not the biggest market for this variety.

## Food pairings

Limniona has delicious juicy tannins and modest alcohol, so it does not need big, bold dishes to be enjoyed with. It's a beautiful partner to duck or rabbit, but it can also be enjoyed with a yellow cheese platter featuring the rich Arseniko Naxou PDO cheese.

## Ageing potential

Most Limniona are ready to be enjoyed upon release and can hold up to 5 years following the harvest. Despite this I have tasted delicious mature examples from Zafeirakis at more than 10 years old.

## Notable producers

Zafeirakis, Dougos, Monsieur Nicolas, Monemvasia winery, Karanika, Tsililis, Oenops

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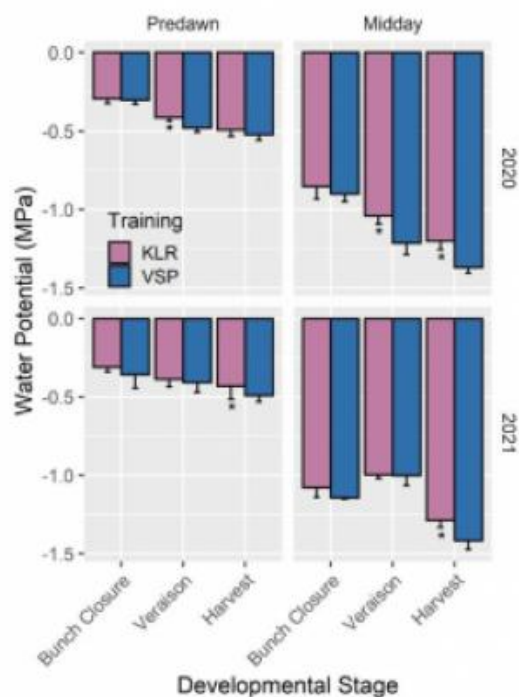


[7]

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[Xinomavro Brilliance: Exploring Navitas Winery's 2021 Vintage](#) [7]

Figure 2. Water potential:  $\Psi_{\text{predawn}}$  and  $\Psi_{\text{leaf}}$  (MPa) at three growth stages (bunch closure, veraison and harvest) of KLR and VSP training systems for 2020 and 2021. The values are averages  $\pm$  SD. Averages followed by \* are different  $p < 0.05$ , Tukey's HSD,  $n = 5$ .

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There were significant differences in vine water status between the two training systems depending on the developmental

[8]

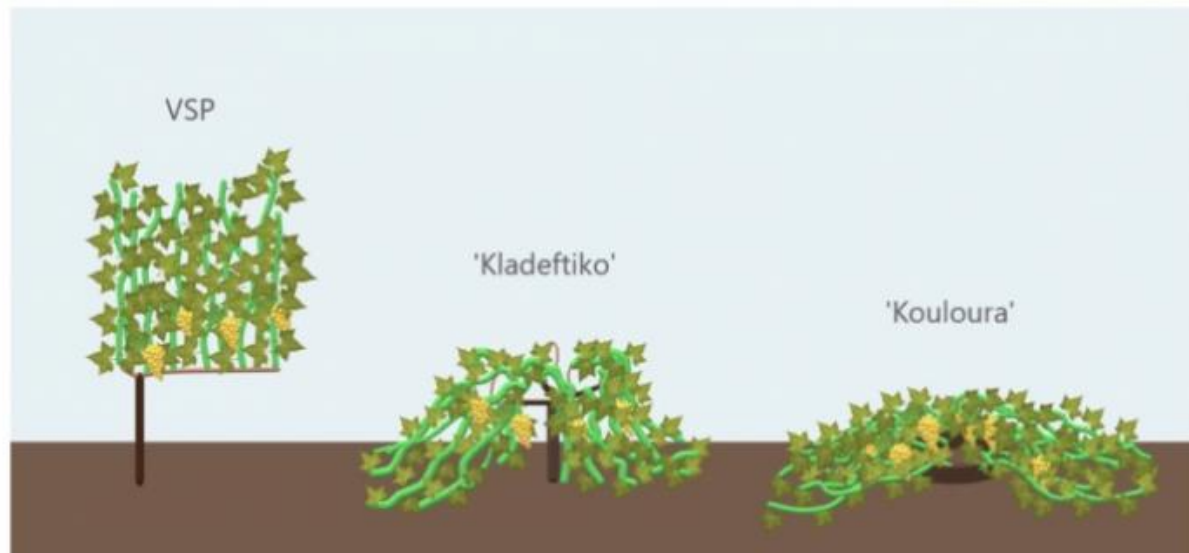
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[Recent study on training systems in Santorini shows that the basked trained system is the best solution to climate change](#) [8]

of 310 mm (average from 1974 through 2013) has been observed, which is even lower than in any regions of Crete (southwest Spain) and Pafos (Cyprus), where the precipitation varies from 380 to 700 mm (García-Martín *et al.*, 2022).

Own-rooted and phylloxera-free vines have been cultivated on the volcanic soil of Santorini for thousands of years. All this time, vines have been cultivated using two traditional training systems, the 'Kouloura' and the 'Kladeftiko' (Figure 1), which are well-adapted to the specific climatic conditions of the island. (Xyrafis *et al.*, 2021).

Figure 1. Illustration of the traditional training systems of Santorini ('Kladeftiko' and 'Kouloura') and the VSP.



The objective of this study was to compare the physiological and agronomic response of Assyrtiko grapevines to the traditional training systems 'Kouloura' and VSP training system over two growing seasons and to establish the factors influencing the performance of each system in the semi-arid conditions of Santorini Island as an alternative training system to adapt viticulture in other warm, dry wine regions.

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## Links

- [1] <http://climatlas.hnms.gr/>
- [2] <https://twitter.com/share>
- [3] <mailto:?subject=Limniona&body=https://www.karakasis.mw/greek-varieties/limniona>
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