GROUNDBREAKING RESEARCH PROVES THE VALUE OF OLD VINE GARNACHA AND HELPS CERTIFY OLD VINES

Carried out in association with the Universities of Navarra and Zaragoza, as well as leading wineries Ainzón, Aragonesas and Borsao, the results of two studies developed as part of the Garnachas Históricas project were presented at the Old Vine Conference in California on 1 November 2025 in a Technical Briefing entitled:

CRDO Campo de Borja's findings on 'How vine age affects ageing capacity and flavour development' and 'The accurate certification of old vine age'

The results of the research, presented by José Ignacio Gracia Lopez, Director & Technical Secretary, CRDO Campo de Borja and introduced by Dr Laura Catena, MD Catena Institute of Wine:

- **Prove the greater ageing capacity of wines made from old vine Garnacha and their greater expression of site specific aromas when compared to wines made from younger vines**
- **Establish a scientific method for dating a vineyard when older planting records are often unreliable**

California, 1 November 2025

The Meeting of the Minds 2025, the Old Vine Conference's extraordinary convention in Northern California, saw the release of the results of member CRDO Campo de Borja's groundbreaking Historic Garnachas research project started back in 2022. Aimed at highlighting the value of its old vine Garnacha parcels and safeguarding their heritage in a region that is known as the cradle of the variety, the project was developed in collaboration with the Ainzón, Aragonesas and Borsao wineries, with the support of the Government of Aragón and the European Union, and covered two areas of research:

- The first working group, led by Professor Vicente Ferreira at the University of Zaragoza, studied how vine age affects ageing capacity and flavour development.
- The second study, led by Professor Luis Gonzaga Santesteban at the University of Navarra, looked into into the accurate certification of old vines.

To carry out the studies, six parcels of historic vineyards between 30 and 90 years of age (including a parcel of unknown age) were initially selected, in the villages of Magallón, Pozuelo de Aragón, Fuendejalón, Ainzón, Borja and Tabuenca, located across the lower zone of the DO, the Ribera del Ebro (300m), and the Somontano del Moncayo (900m). Neighbouring parcels of a younger age (8-13 years) were selected to act as controls in the aroma experiment.

Dr. Laura Catena, Catena Institute of Wine, who moderated the session, commented:

"The Campo de Borja Old Vine research by the Universities of Navarra and Zaragoza establishes a before and after for Old Vine valorisation and preservation. This multi-year study, including multiple sites, establishes with scientific certainty what many of us know through hands-on experience: that old vines make better wine. The vineyard dating methodology creates a framework for establishing vineyard age across the world. Kudos to Spain for leading the way in Old Vine research!"

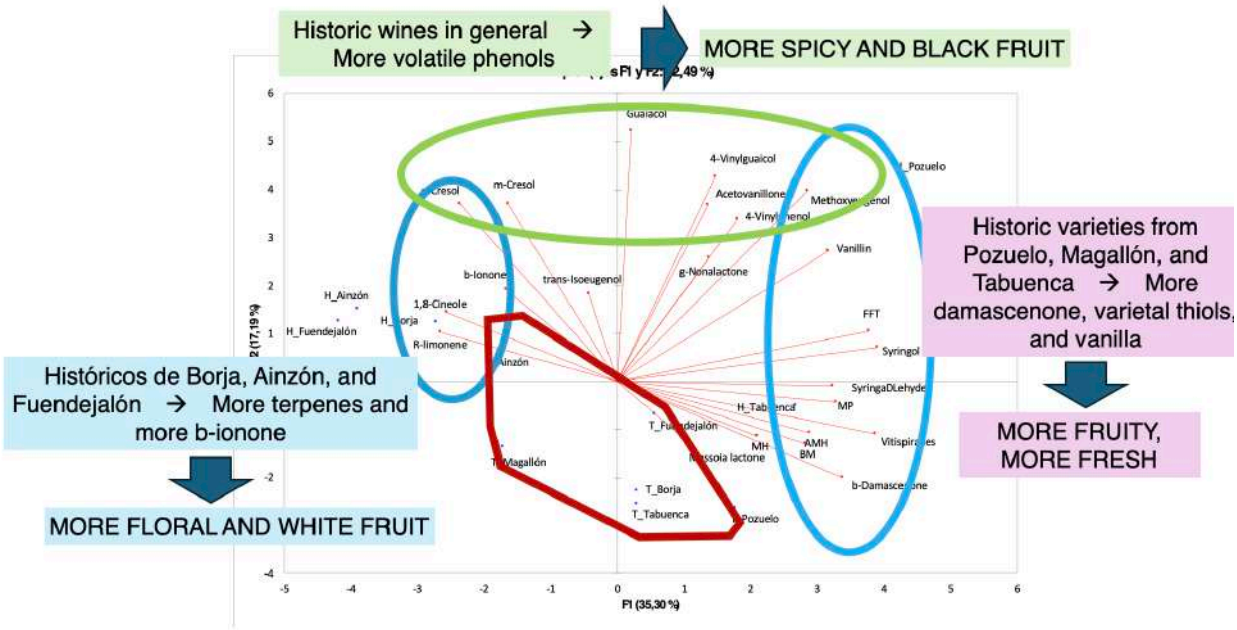
The methodology and results of the two experiments, which took place over four years, are summarised below:

The University of Zaragoza study into how vine age affects the ageing capacity and flavour profile of wines

Over three consecutive years, the University of Zaragoza's Aroma Analysis Laboratory (LAAE) studied the varietal aromas of Garnacha grapes from historic vineyards alongside those of grapes from adjacent young vineyards across the Campo de Borja. To ensure objective analysis, Garnacha *mistelas* — musts fortified with alcohol to preserve primary aromas - were created using innovative techniques for extraction and scientific analysis of the aromas.

"The results were remarkably consistent," explained Professor Vicente Ferreira; "We saw that across all sites, the fruit from old vines displayed greater complexity and a more intense phenolic structure, making wines that are more suitable for longer ageing. They are showed more black fruit than red fruit aromas. Another key finding was their ability to express the distinct character of the *terroir.* While the wines from younger vines were similar in profile, we saw marked differences between the old vine grapes from different sites."

Specifically, grapes from historic vineyards systematically contain higher levels of aromas derived from shikimic acid (such as guaiacol and eugenol), which are essential for the perception of black fruit. Moreover, grapes from historic vineyards located in Pozuelo, Magallón, and Tabuenca contained greater amounts of varietal thiols, vanillin, and β-damascenone, giving them a fresh and fruity profile. In contrast, grapes from Borja, Ainzón and Fuendejalón had higher levels of terpenes and β-ionone, providing them with a distinct floral profile.



The projections of the samples on a “composition map” show clearly that all samples from young vineyards (marked in red) resemble one another, while samples from historic vineyards (in blue) consistently shift toward more individualised areas of the map — each characterised by higher concentrations of specific groups of aromatic components.

The University of Navarra study into the accurate certification of old vine age

One of the key challenges across Spain is the accurate certification of vine age. Many vineyards planted in the late 19th and early-to-mid 20th centuries were not registered until many years later; anecdotal evidence suggests that such parcels are often far older than the dates noted in official records.

Professor Luis Gonzaga Santesteban, who led the study into the systematic certification of old vine age, alongside Dr. Mónica Galar, at the Public University of Navarra, explains how the issues were addressed: "People tend to think that vine age can easily be certified via official registers or that the age can be established by counting the rings of a branch like a tree. But vines do not grow in the same way as trees, and official vineyard records are only accurate from 1994 onwards, so the reality is much more complex. We combined a number of sources of information - aerial photographs taken at different points in history, relative measurements of the growth of vines as well as genetic analysis of vines and rootstocks - to create an empirical way of assessing vine age."

Beyond the initial parcels that were selected, 84 representative plots were analysed using aerial photographs from 1956 to 2022. These established not only the earliest date when vines can be seen, but also their planting distribution and density. A morphological study using handheld scanners measured the distance between pruning cuts and the total height of the vines. An average annual growth of 1.55cm was observed, allowing the precise age estimation of vines. It was confirmed that trellis systems appeared around 1997, while older bush-trained vines mainly used the Rupestris du Lot rootstock, typical of pre-1970 plantings. This probabilistic method has been validated and now allows reliable dating of old vineyards in the appellation.

The analysis of growth between pruning cuts proved to be the most effective, simple, and practical method for estimating vineyard age and led to the development of a formula to calculate a vine's age based on its annual growth and total height.

Conclusions

The Old Vine Conference co-founder Sarah Abbott MW remarks on the significance of the findings for the old vine community: "We are delighted that member DO Campo de Borja decided to launch the results of these pioneering studies at the Old Vine Conference Meeting of Minds 2025. We have long believed through comparative tastings that wines made from old vines display greater concentration and complexity of flavour, as well as being better able to express site-specific nuances, so to have this proven scientifically by the team at the University of Zaragoza is a great step forward for the old vine community, giving us evidence that supports our belief that old vines are special and require protection. The study by the University of Navarra is of equal value for its establishment of a method of verifying vine age in regions where records are incomplete or unreliable."

José Ignacio Gracia Lopez, Director & Technical Secretary, CRDO Campo de Borja concluded by stating: "Garnacha is a variety that originates in Aragon, so we are particularly interested in ensuring that our collection of historic Garnacha vineyards lives on for future generations. These studies support our vine growers and wineries in allowing us to accurately certify the age of older parcels, as well as proving the value of older vines in producing more flavourful, age-worthy and terroir-specific wines."

ENDS

- For more information on the Garnachas Históricas Project please visit: docampodeborja.com/garnachas-historicas @docampodeborja
- For more information on the Old Vine Conference, please visit: oldvines.org

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Garnacha vine in El Plano vineyard, Magallón, planted in 1939