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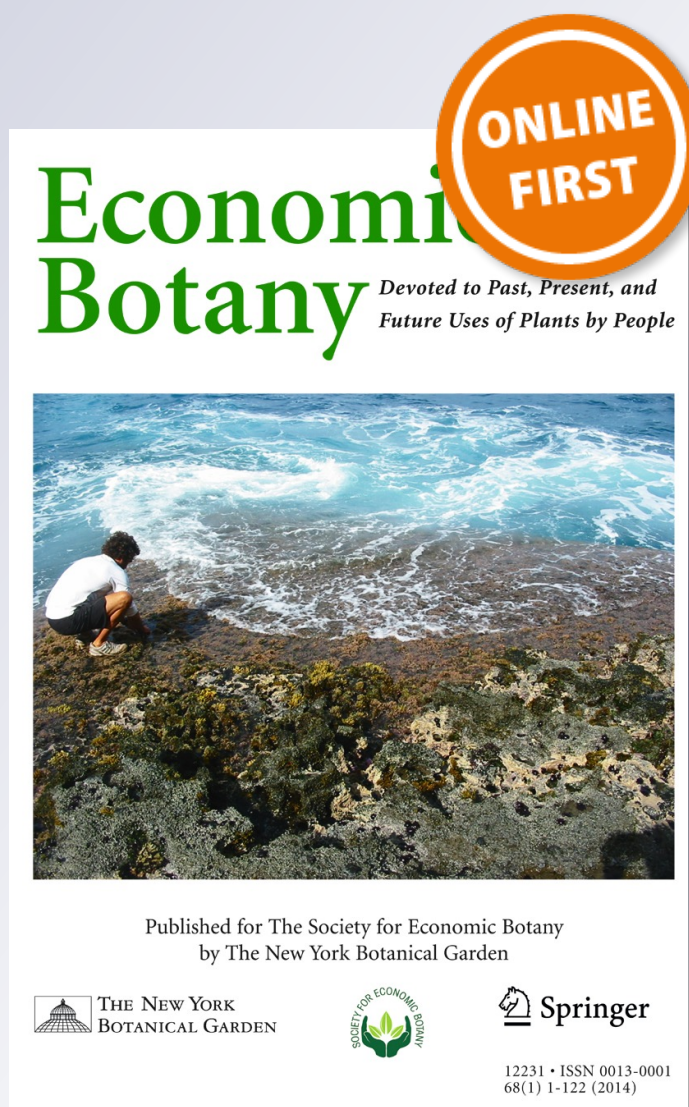
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# Works of Art and Crop History: Grapevine Varieties and the Baroque Altarpieces<sup>1</sup>

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This study compares the ampelographic characterization of adult leaves and clusters from real grapevine varieties with those present in Solomonian columns of Baroque altarpieces. In a previous preliminary work, the authors concluded that sculpted grapevine leaves in Baroque altarpieces were represented with botanical accuracy and may represent real varieties. Grapevines are a very important decorative feature of these art works, in particular as ornamentation on Solomonian columns. The present work examines more of these carved leaves and includes also the clusters. Six real grapevine varieties were identified on as many altarpieces, enriching their cultural value and pointing to their existence in the wine-growing zone by the 17th century. Further varieties may be identifiable on Baroque altarpieces in other winemaking areas using the same methods. These results encourage other researchers to use unconventional sources for the study of the evolution of agriculture and crop history.

El presente trabajo compara a nivel ampelográfico las hojas adultas y los racimos de variedades de vid reales con aquellos que aparecen representados en las columnas salomónicas de ciertos retablos barrocos. En un trabajo preliminar publicado anteriormente los autores habían concluido que las hojas esculpidas en estos retablos barrocos están representadas con una gran precisión botánica y por lo tanto podrían estar representando a variedades reales. La vid es un elemento decorativo muy importante en este tipo de obras de arte, en particular como decoración de las columnas de estilo salomónico. El presente trabajo examina un mayor número de retablos e incluye el estudio de los racimos. Seis variedades reales de vid han sido identificadas en otros tantos retablos lo que les aporta nuevos valores culturales y permite demostrar su existencia en la zona vitícola en el siglo XVII. Otras variedades podrían ser también identificadas en retablos barrocos localizados en otras zonas vitícolas diferentes siguiendo la misma metodología. Estos resultados podrían abrir las puertas para que otros investigadores utilicen fuentes de información menos convencionales en el estudio de la evolución de la agricultura y la historia de los diferentes cultivos.

**Key Words:** *Vitis vinifera* L, ampelography, Baroque sculpture, Solomonian columns, viticulture history, ethnobotany, plants in works of art.

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## Introduction

Renderings of plants in paintings and murals have been used by many authors to investigate

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the history of agriculture and plant use, and to demonstrate the existence of certain species at particular times and places (Chapman et al. 2012; Daunay and Janick 2007; Paris and Janick 2005). However, no such work has ever involved the grapevine *Vitis vinifera* L. In a previous work, Gago et al. (2009b) compared real and sculpted leaves in Baroque altarpieces from an ampelographic point of view, and suggested that the artists did indeed use real leaves of grapevine as their models. In this paper the dataset has been

increased and the grape clusters were also studied. This provides information to confirm the identification of six varieties of grapevine depicted on Baroque altarpieces in northern and northwestern Spain. Such altarpieces might therefore provide information on the varieties grown in other winemaking regions during this period.

During the 17th and 18th centuries, Baroque art rose to great importance in Spain, especially in the northwest, where the pilgrimage city of Santiago de Compostela had a well-known school for artisans. Altarpieces were commonly used to decorate the inside of Catholic churches, and those of the Baroque period are regarded as among Spain's great contributions to the history of art (Martín 1993). Columns are an important component of altarpieces, and among them Solomonic columns are those most identified with the Baroque period (Martín 1993). Solomonic columns have a helical shaft decorated in plant motifs, usually grapevine clusters and leaves.

The authors' experience as ampelographers (*ampelos* = vine, *grafos* = description) in the production of typical leaf diagrams for the description of different varieties (Martínez and Grenan 1999; Martínez 2002), and the perfection with which the leaves on some Solomonic columns are depicted, led the authors to suspect that certain details of the latter could only have been so faithfully captured if the artist had used real plant models (Gago et al. 2009b). It seemed obvious that the next step should be to carry out a more thorough analysis of some carvings in order to identify real varieties among them. These carvings might represent not only works of art, but also ampelographic records of the vines growing in their vicinity (or in the vicinity of the carver's workshop) in the 17th and 18th centuries.

## Methods and Materials

The plant material and the methods for the ampelographic description of real and sculpted leaves are described in Gago et al. (2009b). In the present work, the number of sculpted leaves was increased to 281 on a total of 101 altarpieces. The quantitative variables—vein lengths and angles between veins—necessary for the reconstruction of average leaves were measured following the method of Martínez and Grenan (1999). Quantitative variables were recorded by taking digital photographs (10 leaves per cultivar during three

consecutive years, in the case of real leaves, whereas for the sculpted leaves each carving was used as a “mean leaf”) and subjecting them to analysis using AnalySIS FIVE software (Soft Imaging System, Münster, Germany). Finally, character ratios were calculated using this quantitative data. Ampelographic descriptions of both types of leaves were made following the International Organization of Vine and Wine (OIV) method (OIV 2009).

In the previous work the study of clusters was not included. For the ampelographic description of the real clusters, during three consecutive years ten representative clusters from each variety were selected per year according to the norms of the OIV (OIV 2009). The length (peduncle excluded) and width were measured from digital images of the clusters using analySIS FIVE software. The characteristics “density” (OIV code nº 204), “shape” (OIV code nº 208), and number of wings of the primary bunch (OIV code nº 209) were also recorded. For the ampelographic description of the sculpted clusters the same methodology was used. When the same cluster carving was repeated along one column, just one picture was taken; when there was more than one cluster type, we took as many pictures as clusters identified as different.

A total of 18 varieties were used to compare with the grapevines represented on the altarpieces (Gago et al. 2009b): Agudelo, Albarello, Albariño, Albarín Blanco, Caíño Tinto, Caíño Branco, Carrasco, Cascón, Tinta Castañal, Dona Branca, Godello, Lado, Loureira, Pedral, Silveiriña, Torrontés, Treixadura, and Verdejo Negro. In the preliminary work (Gago et al. 2009b), the variety Serradelo was also included, but later research has shown that this is a synonym for the Albarello variety. The ampelographic and molecular analysis of these varieties has shown that many are unique and unknown (Gago et al. 2009a; Martínez and Pérez 2000; Santiago et al. 2005a, 2005b, 2007). Even if references to some of these varieties were found in ancient bibliographies, for others we do not know when they were first cultivated in the region. If these varieties were represented in the altarpiece Solomonic columns, these carvings might therefore represent not only works of art, but also ampelographic records of the vines growing in their vicinity (or in the vicinity of the carver's workshop) in the 17th and 18th centuries.



For the location of the sculpted grapevines, the literature on Baroque religious sculpture in northern and northwestern Spain was examined (Álvarez-Fernández 2001; Diéguez-Rodríguez 2003; García Iglesias 1990; Ramallo-Asensio 1985) and the inventories of the artworks belonging to different institutions (archbishops, dioceses, and universities) were consulted to determine the whereabouts of altarpieces of interest and their date of carving. It should be noted that altarpiece catalogues are very rare, especially those that take into account rural churches. Indeed, it was difficult to collect any information on the types of altarpiece in the most rural churches. In the end, we visited them one by one to determine whether they had altarpieces with Solomonic columns decorated with grapevine motifs.

Given the large number of altarpieces detected, only those in the main winemaking areas (i.e., those with PDO [Protected Denomination of Origin] status) of Galicia and Asturias were inspected (Fig. 1 and Electronic Supplementary Material [ESM] Table 1). Within these areas, visits were made to both the largest churches, such as the Cathedrals of Santiago de Compostela and Orense, and the smallest churches and chapels.

A total of 101 altarpieces were found in 54 churches (Fig. 1 and ESM Table 1). In many churches, especially large ones, both the high altarpiece and the collaterals had Solomonic columns decorated with grapevine motifs. Photographs were taken of the grapevine leaves and clusters represented following the method described in Gago et al. 2009b, and comparisons were made with real leaves and clusters, or with images from our image databank.

## Results and Discussion

A total of 101 Solomonic columns decorated with grapevine motifs (Figs. 1 and 2) were examined, and a total of 281 leaves and 188 clusters were photographed and measured. Fewer different clusters than leaves were noted, because the artist often had the habit of making a model of a cluster and then repeating the same pattern along the column, especially in small altarpieces.

The majority of the represented motifs, although recognizable as parts of grapevines, were quite schematic (Fig. 3). In 45.54% of the altarpieces, the leaves were not botanically correct.

For example, some leaves were carved with three lobes and three main veins, while others were given four lobes, quite unlike those of any real variety. Some leaves were carved with a central ramifying vein, whereas the veins of a real leaf arise at a single point in the petiole. The altarpieces in some churches in the Cangas del Narcea (Asturias) area (altarpiece codes from 16 to 34) had grapevine leaves with exaggerated deep upper and lower lateral sinuses—again quite unlike the detail of a real leaf. Other leaves were excessively rounded.

However, some of the carvings showed great botanical accuracy (Fig. 4). In these, green shoots were depicted wrapped around the columns, clearly reflecting the climbing nature of the plant. The shoots showed buds and had clear nodes and internodes, the length of the latter at the shoot tips being shorter than over the rest of the shoot, just as in real vines. The shoot tips showed characteristic small leaves, some of which were expanded and others still closed around the terminal bud (Fig. 4F). Both simple forked tendrils were present, sometimes straight and sometimes rolled up (Fig. 2 and Fig. 4B). The leaves were also accurately portrayed with dentate edges, and either “entire” (i.e., with only one lobe) or with three, five, or more lobes (sometimes superimposed as the ones in Fig. 2), just like the leaves of real grapevines. They also showed petioles and petiolar sinuses of appropriate dimensions.

The ampelometric measurements made in the sculpted leaves are shown in the supplementary data section (ESM Tables 2 and 3). Real leaf characterizations have been published elsewhere (Gago et al. 2009b).

The ampelometric and ampelographic data for the real clusters are shown in Table 4 (ESM), images of the real clusters are shown in Fig. 5. The ampelometric and ampelographic data for the 188 different clusters found in the altarpieces are shown in Table 5 (ESM). We emphasize that, though there are clusters with very different forms (Fig. 6a and 6b), all can be identified as grapevine clusters and in general they were very lifelike. For example, some had one or more wings (subclusters on the main grape cluster; e.g., Fig. 6a and 6b), while others had none. Sometimes on one column we even found two types of grape cluster, i.e., a smaller form corresponding to the cluster of a secondary shoot, and a larger form corresponding to the cluster of a young fruiting shoot (Fig. 2), and this corresponded to what one might see on a real vine.

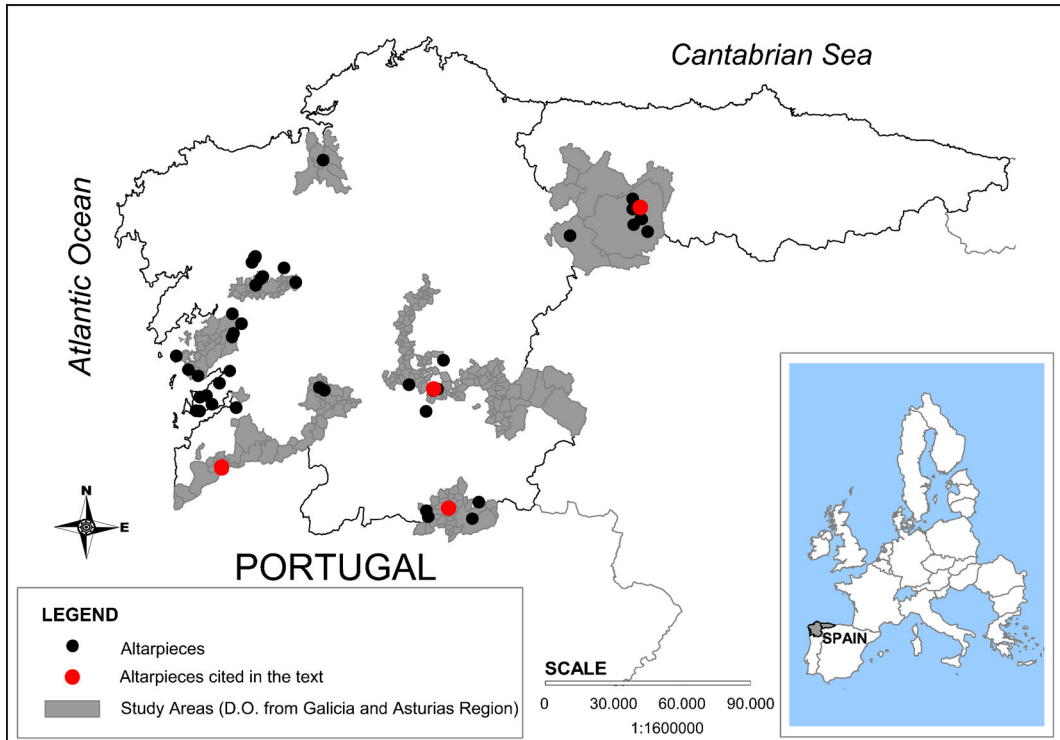


Fig. 1. Map of the Protected Denomination of Origin areas in northern and northwestern Spain, their winemaking districts, and the locations of the inspected altarpieces.

Regarding the cluster ratio “length/ width” (ESM Table 5 and also represented graphically in Fig. 7), the range of values in the clusters from the altarpieces (maximum 2.27 and minimum 0.79) is larger than the one described for the real clusters (ESM Table 4; maximum 1.18 and minimum 1.11); nevertheless 85.1% of the clusters from the carvings are inside the interval fixed by real clusters. This is graphically represented in Fig. 7, showing the distribution of the length vs. width for the real and the sculpted clusters. In the graph most of the clusters are concentrated in a central cloud of points; inside this cloud all the real clusters are situated as well as most of those of the altarpieces. However, two small groups of sculpted clusters are placed outside this zone of the plot. The first group, placed in the top right corner of the graph, comprise very big clusters, which belong to altarpieces of great size with very thick and high columns (altarpieces nº 93, nº 77, nº 86, nº 81). In such types of columns, the artisan had to cover a large surface with leaves and clusters; to do so he made them larger and especially stretched both

the leaves and the clusters to adapt them to the shape and size of the column. The second group, placed in the lower left corner of the graph, includes clusters with a small size, which in turn correspond to small altarpieces with thin and low columns.

For the qualitative parameters in clusters (ESM Table 5), the values for the parameter OIV 204 (Bunch density) were not recorded for the carved clusters, since all present a density value of “medium.” This is a logical result, since in a wood carving it would be difficult to do a loose cluster as the empty spaces between berries would be extremely complicated to represent. For the parameter “shape” (OIV 208), we found that most of the carved clusters have a conical shape (90.96%) and a few would be considered cylindrical (9.04%). All the real varieties used to compare the carvings from the altarpieces present a cluster with a conical shape (Fig. 5 and ESM Table 4).

Finally, for the parameter “number of wings of the primary bunch” (OIV code nº 209), all kinds of clusters were found in the altarpieces: wings



**Fig. 2.** Example of a Solomonic column from altarpiece nº16. Spatial distribution of leaves and clusters along the column. 1: tendril; 2: folded leaves; 3: different clusters made by the same artisan.

absent (35.64%), clusters with one wing (45.21%), and clusters with two wings (19.15%) (ESM Table 5). The same situation occurs with the group of real varieties (Fig. 5), though in this case, the most repeated notation is “cluster without wings.” This result seems logical again; the artisan would more often choose clusters with one or several wings to represent in the columns because these are visually more attractive. But the fact that clusters without wings have also been found indicates that indeed they were trying to represent in their sculptures what they found in the surrounding nature. In addition, it is important to note that sometimes in the same column we found clusters with similar shape and dimensions but with a different number of wings (see clusters of the altarpieces

31, 37, 55, or 59, ESM Table 5, and Figs. 6a and 6b), and this feature appears frequently in real grapevine plants also.

The grapevine carvings represent quite well the variability recorded in the different official descriptions of grapevine varieties made by the International Organization of Vine and Wine (OIV), the International Union for the Protection of New Varieties of Plants (UPOV), and many ampelographic studies (Cabello et al. 2011; Eiras Dias et al. 1988; Galet 2000). Their realistic botanical details suggest that the artisans who carved them either had considerable botanical knowledge, which seems unlikely, or that they used real plants as models. Certainly, the Catholic Church promoted realistic religious art during the Baroque Period (Martín 1993), and the best





Fig. 3. Vine leaves carved on altarpieces that bear no resemblance to the leaves of any real grapevine variety.

artisans may have been able to produce such material. Grapevine is the key element in the ornamentation of the Solomonian columns, due to its great symbolism, but realistic representations of other natural elements can also be found in the Baroque altarpieces, as, for example, diverse fruits (especially pomegranates, *Punica granatum* L., and pears, *Pyrus* sp.) and birds (that represent the souls feeding of the eternal food, which is the grapevine). As in the case of the grapevine, some birds are represented very schematically, but others show a great level of detail, and surely an expert ornithologist will be able to identify the species (Fig. 8).

In the case of grapevine, the use of real models is further supported by the fact that we encountered many more renderings of leaves with just one lobe than with several; many ampelographic studies (Gago et al. 2009a; Martínez and Pérez 2000; Santiago et al. 2005a) have shown that the leaves of grapevines in northwestern Spain are generally single-lobed or little divided. In addition, the grape clusters represented also seem to have been produced to scale. Indeed, such was the botanical accuracy of the carvings on five altarpieces that we were able to clearly recognize the vines depicted as locally-growing (or once locally grown) varieties. These are described below.


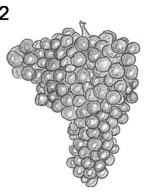
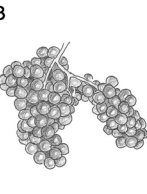






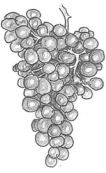








**Altarpiece 55** is found the Museum of the Tui Cathedral in the O Rosal winemaking district, part of the well-known Rías Baixas PDO area (Fig. 9). This altarpiece, which was carved in 1710 by Francisco Castro Canseco, clearly shows the leaves and grape clusters of the Loureira variety. This variety has long been planted (quite extensively so) in this district. It may have been cultivated for centuries in the south of the province of Pontevedra and northern Portugal, although the ancient literature contains few references to it. In a publication on the phylloxera invasion in Spain (Ministerio de Fomento 1911), this variety is cited as one of the most important white varieties in the province of Pontevedra both before and after the epidemic. Díaz-Losada et al. (2013) indicate it to be genetically very similar to other varieties of the Iberian northwest. It has characteristic leaves with seven or more lobes, and deep, U-shaped upper lateral sinuses. As has been noted, most of the grapevines varieties in northwestern Spain are generally single-lobed or little divided, so divided leaves with very deep sinuses are unusual. The similarity between the leaves represented on the altarpiece and the real leaves of this variety is striking.

The grape clusters depicted in this altarpiece are also identical to those of the Loureira variety. Loureira clusters have a long and curved central





**Fig. 4.** Details of vine leaves and clusters correctly represented on the altarpieces: underside of leaves (A and C), forked tendrils (B), tip of a shoot (B and F), petiolar and lateral sinuses (A, B, and D), winged clusters (E, H), main veins coming out from the petiole (A, B, F, and G), green shoot showing grooves, nodes, internodes, and axillary buds (G), arrangement of leaves, tendrils, and grape clusters on a green shoot (I).

1  L=16.79 cm	2  L= 17.58 cm	3  L=13.47 cm	4  L=15.91 cm	5  L=12.23 cm
6  L=13.12 cm	7  L=12.83 cm	8  L=17.83 cm	9  L=13.46 cm	10  L=18.75 cm
11  L=16.04 cm	12  L=10.05 cm	13  L=23.03 cm	14  L=19.98 cm	15  L=11.33 cm
	16  L=21.22 cm	17  L=13.31 cm	18  L= 12.70 cm	

**Fig. 5.** Drawing of the clusters from real varieties. 1: Agudelo; 2: Albarello; 3: Albariño; 4: Blanco Lexítimo; 5: Caiño Tinto; 6: Caiño Blanco; 7: Carrasco; 8: Cascón; 9: Tinta Castañal; 10: Dona Blanca; 11: Godello; 12: Lado; 13: Loureiro; 14: Pedral; 15: Silveiriña; 16: Torrontés; 17: Treixadura; 18: Verdejo. L: average cluster length in cm (peduncle excluded).

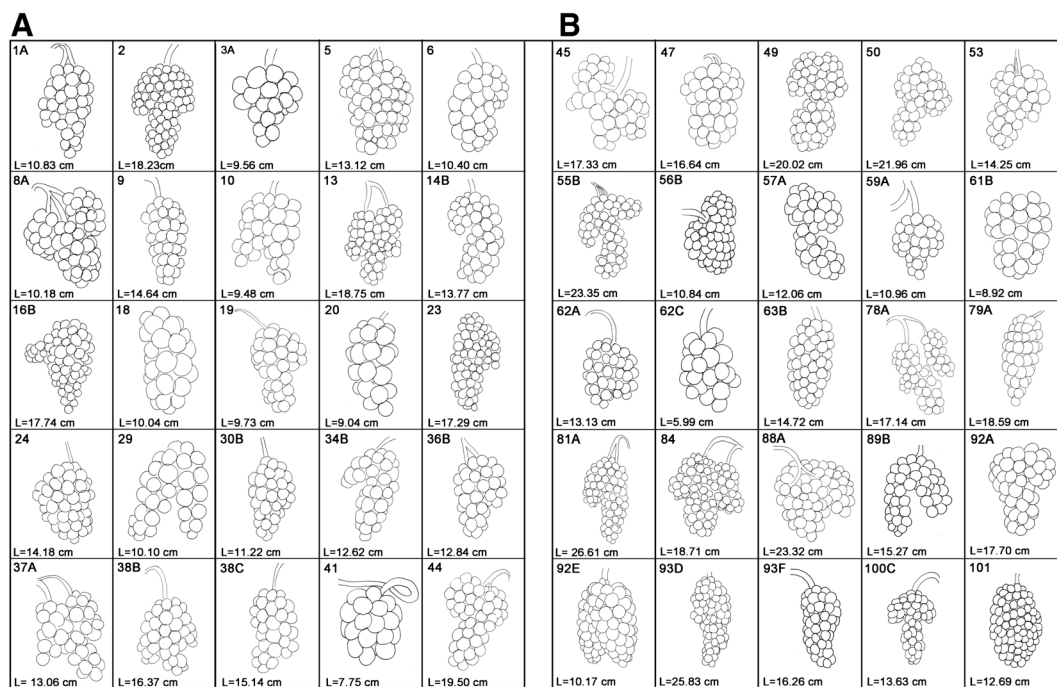
rachis, something seen infrequently in other varieties. The carved clusters also have shoulders or small lateral wings that lie almost perpendicular to the central rachis, as seen in real clusters of this variety.

**Altarpiece 49** (Fig. 9) is found in the Convento de las Clarisas also in Tui, and clearly shows grapevines of the Tinta Castañal variety. This piece was produced at the beginning of the 18th century, but the author is unknown. This date, however, suggests it may also be the work of Francisco Castro Canseco, or perhaps of his apprentice Domingo Rodríguez de Pazos; both worked on the Tui Cathedral in 1716. Tinta Castañal is a red variety that is apparently cultivated nowhere else in the world. We have found neither reference to it growing elsewhere

nor any other local name for it, despite it having been the subject of numerous ampelographic and molecular studies (Gago et al. 2009a; Santiago et al. 2008). According to viticulturalists, it has been grown in this area near the River Miño (bordering Portugal) for centuries (García de los Salmenes 1912), although there is no evidence to support this claim. The leaves are larger than those of the other varieties growing in the Iberian north/northwest. The blade is pentagonal and often shows a certain asymmetry, and the tips of the upper lateral lobes extend outward a little—a quite distinctive characteristic of the variety. All of these features are clearly represented in the carved leaves on the altarpiece (Fig. 9).

**Altarpiece 53** (Fig. 10), which was produced in 1711 by Castro Canseco, is also found in the





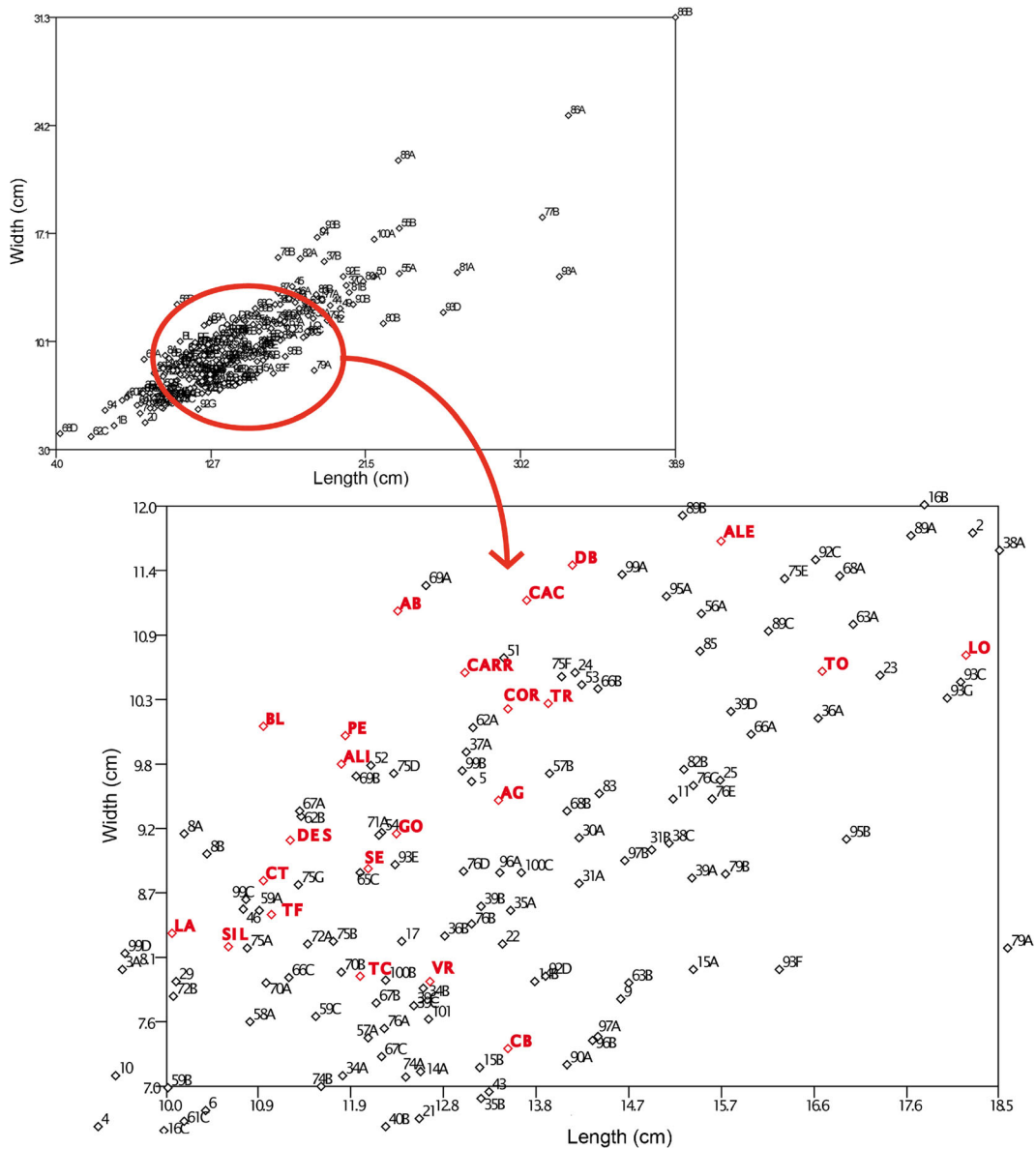
**Fig. 6. a and b** Selection of some silhouettes from the clusters present on the studied altarpieces. The number on top left indicates the cluster code (see [ESM](#)). L: cluster length in cm (peduncle excluded).

Museum of the Tui Cathedral, and clearly shows the leaves of the best known and most economically important white variety of the Rías Baixas PDO area: Albariño (Fig. 10). This variety is also cultivated in northern Portugal under the name Alvarinho (Loureiro et al. 1998; Martínez et al. 1994). Over the last 20 years, different authors have suggested many origins for it. According to Johnson (1989), the wines of northern Portugal, which are stronger and more stable than others of the Miño area, have for centuries been made from Alvarinho grapes originally brought from Greece by the English (although he does not say when). Some authors (Hidalgo 1993; Posada 1978) indicate that Albariño was brought from the Rhine by the monks of Cluny, although again the date is unclear. According to Huetz de Lemp (1967), Albariño was cultivated in Galicia in 1753 in the south of the Province of Pontevedra in areas now covered by the Rías Baixas PDO. What is known for sure, however, is that centuries-old Albariño grapevines can still be found in certain parts of Galicia (Martínez et al. 2005).

In the 19th century, Casares (1843) made the first description of the variety, just four lines

in which he noted the morphology of the leaves and clusters. Nowadays there are many descriptions available, some of which have been key in differentiating this variety from others with which it had become confused in the late 20th century (Loureiro et al. 1998; Martínez et al. 1994; Martínez 2002; Santiago et al. 2007; Tassie et al. 2009). The leaves depicted on altarpiece 53 are entire with 3–5 lobes, with and without lateral sinuses, and with the petiolar sinus barely open; these are exactly the features seen in real Albariño leaves. This variety was, therefore, clearly cultivated in the O Rosal district at least from the time when the altarpiece was made.

**Altarpiece 99**, which was produced in the 17<sup>th</sup> century by an unknown artisan, is found in the parish church of San Vicente in Sober (province of Lugo), which lies in the Amandi district of the Ribeira Sacra PDO area (Fig. 10). The leaves depicted look very strongly like those of the variety Albarello, which has long been cultivated in the O Barco de Valdeorras and Amandi districts. This variety is known as Alvarelho or Brancellao in Portugal, and as Serradelo in other parts of Galicia (Díaz-Losada et al. 2013; Gago et



**Fig. 7.** Graphical representation of the length vs. width for the real clusters (average of 10 different measurements) and the clusters from the altarpieces.

al. 2009a). It is one of the oldest red varieties of the region and produces wines of great quality (Huetz de Lemp 1967; Labrada 1804). The leaves of this variety have deep lateral sinuses with well-marked lobes, a characteristic not often seen in northwestern Iberia. The leaves also have an orbicular shape with an open petiolar sinus, and the lobes overlap, closing off the exit of upper lateral sinuses.

**Altarpiece 76**, which was produced at some time during the 17th century by an unknown artisan, is found in a church in the Monterrei PDO area. The carved leaves are very similar to those of a traditional variety of the area: Dona Blanca (Fig. 10). They are pentagonal with five lobes, large, well-marked teeth, an open petiolar sinus, and deep lateral sinuses, all characteristic of Dona Blanca. In addition, the waves in carved



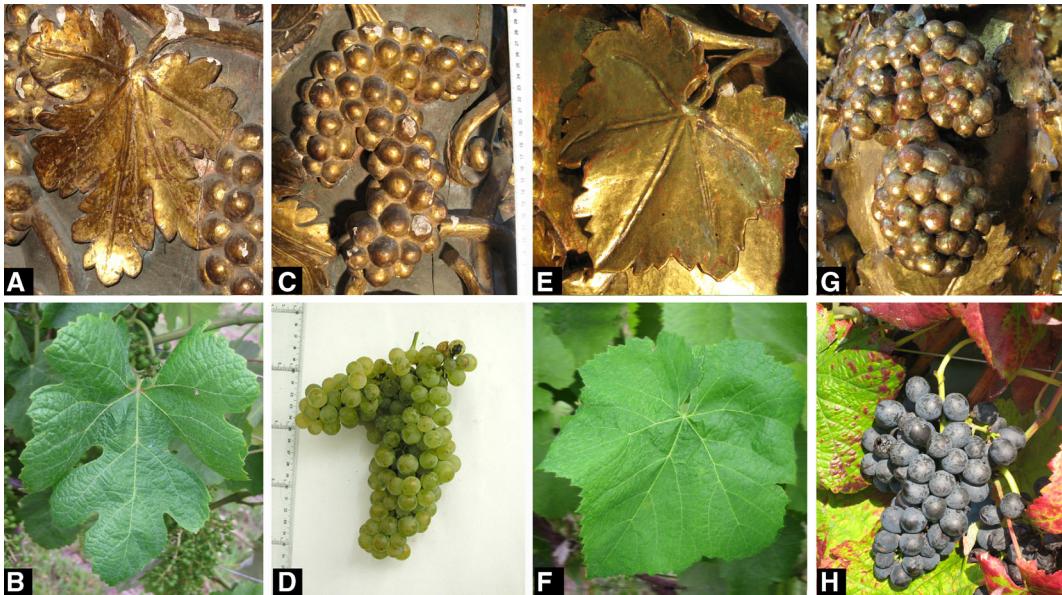


Fig. 8. Examples of birds sculpted in the Solomonic columns.

leaves are characteristic of the variety. Pacottet (1928) cites Dona Blanca as a white variety

cultivated in Galicia. It is also grown in other parts of Spain and under many different names,





**Fig. 9.** Images from altarpieces 55 (A, C) and 49 (E, G). Examples of a real Loureira grapevine leaf (B) and cluster (D), and their clear representation on an altarpiece in an area where this variety is traditionally grown (A and C). Grapevine leaf (E) and cluster (G) on altarpiece 49 and typical Tinta Castañal leaf (F) and cluster (H).

e.g., Moza Fresca, Doña Blanca (the Spanish translation of the Galician “Dona Blanca”), and Cigüente (Cabello et al. 2011), leaving its origins unsure. Until now it was thought that this variety arrived in Galicia from the neighboring region of Castilla y León after the phylloxera crisis, but the finding of this altarpiece suggests it may already have been cultivated in what is now the Monterrei PDO during the 17th century.

**Altarpiece 16**, which was produced over the period 1687–1709, was designed by Manuel de Ron and made by Francisco Arias (Fig. 10). It is found in a church known as the Santuario del Acebo (in Cangas del Narcea, Asturias) in the Vinos de la Tierra de Cangas Geographical Indication Area, and depicts grapevines in great botanical detail. The carved leaves are pentagonal, divided, with five or seven well-marked lobes (slightly superimposed), and rather deep upper lateral sinuses. However, despite their great ampelographic detail, these renderings cannot be matched with any variety presently under cultivation in the area, i.e., Albarín Blanco, Verdejo Negro, or Carranquín (Martínez and Pérez 2000). However, these carved leaves (Fig. 10) are very similar indeed to the variety locally known as “Blanca Extra” and internationally as Palomino Fino or Jerez. According to Martínez

and Pérez (2000) it was introduced into Asturias from Andalusia in the late 19th century after the phylloxera crisis; certainly it is cited in no known pre-phylloxera document (Jovellanos 1790–1801; Suarez-Cantón 1879). This variety is very different from those typical of Asturias, and is quite poorly adapted to the region’s climate. Its wines are of low quality in Asturias, although the variety does produce grape clusters four or five times larger than those of any local variety (Martínez and Pérez 2000). Clemente (1807) affirmed that the variety “had been grown [in Andalusia] for so many years that in the area of Sanlúcar people hardly planted anything else” (Sanlúcar now belongs to the Jerez-Xerez-Sherry PDO area). Its Andalusian origin is also mentioned in “La invasión filoxérica en España” (Ministerio de Fomento 1911), where it is recorded as being grown both before and after the crisis. However, the similarity between the leaves of this variety and those depicted on altarpiece nº 16 is striking enough to suggest that this variety arrived in Asturias some 200 years earlier, perhaps directly from Andalusia. Certainly, we know that Manuel de Ron (died 1732) was an Asturian viticulturalist and winemaker of some importance; he would therefore have known the area’s varieties well, but like many modern vineyard owners he may have



**Fig. 10.** Altarpieces 53 (A and C), 99 (E and G), 76 (I and K) and 16 (M and O). Sculpted and real leaves and clusters from varieties Albariño (B and D), Albarello (F and H), Dona Blanca (J and L) and Palomino Fino (N and P).

brought varieties of interest home from the regions he visited. It is also known that this altarpiece was one of the most costly of its time (10,410 reales de vellón when the normal price for altarpieces in the area was 2,000 or less) (Pelayo Fernández, pers. comm.). Certainly, none of de Ron's other known designs show such detail, and Francisco de Arias, the artisan who

represented these details in his wood carvings, must have been well paid for his skill.

The previous six examples of variety identification in columns have been chosen because of their stunning resemblance to real grapevine plants, especially in the case of the leaves. But there are many other carvings that represent botanically correct grapevine leaves and clusters



and that could be associated more generically with several varieties at the same time.

Also, the identification of the real varieties in the altarpiece has been focused on the leaves because, as noted, they are complicated to represent correctly. The clusters are simpler to represent, even for someone not expert in ampelography. In fact, all the sculpted clusters could exist in nature since they can present quite variable morphologies. For a complete characterization of a grapevine variety there are more than 600 characteristics in the OIV official code. The leaf constitutes an excellent organ of determination and classification; before the use of molecular markers was widespread, the description of the mature leaf was the principal element in variety description (Galet 1956; Martínez and Grenan 1999; Ravaz 1902; Rodrigues 1952).

Even if the percentage of varieties identified in the altarpieces is small, the fact that it was possible to identify six varieties confirms the initial hypothesis that these artworks can be useful for the study of grapevine varieties history and evolution. For example, two of the identified varieties, Albariño and Loureira, are very important for the wine production in Galicia region nowadays, and since these two varieties were found in the altarpieces, is a helpful data to demonstrate that they have been cultivated here in the distant past. Quite the opposite is true for the variety Albarello; according to the bibliographical notes, this was one of the most cultivated varieties in the area where the altarpiece was located in the past. But after the 19th century, the area planted with this variety was extremely reduced due to the arrival of new fungal diseases, especially powdery mildew (*Uncinula necator*) to which this variety is very sensitive.

Historical information such as that provided by these six altarpieces may be of commercial importance to viticulturalists; cultural details, traditions, and history are of great value in the marketing of wine, especially in Europe. More interestingly, the fact that real varieties were identified on six altarpieces shows that these pieces of religious art can, in some instances, harbor information on the varieties grown centuries ago in a particular area. Baroque altarpieces can be found in churches in other winemaking areas of Spain (Martín 1993), as well as in France, Italy, Portugal, Germany, and Austria, and across Latin America (Kelemen 1951). This kind of art

work may also hold clues to the history of viticulture in these regions.

The present study focused on a specific geographical area and on a concrete group of grapevine varieties. This was done because this region possesses a great profusion of Baroque art works as well as a significant number of autochthonous grapevine varieties. Nevertheless, we hope that our conclusions encourage other researchers to use unconventional sources, such as works of art, in the study of the evolution of the agriculture and crop history.

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### Literature Cited

- Álvarez-Fernández, D. 2001. El retablo Barroco en la Antigua Diócesis de Tui. Diputación Provincial de Pontevedra, Pontevedra.
- Cabello, F., J. M. Ortiz, G. Muñoz, I. Rodríguez, A. Benito, C. Rubio, and S. García. 2011. Variedades de vid en España. Agrícola Española-IMIDRA, Madrid.
- Casares, A. 1843. Observaciones sobre el Cultivo de la vid en Galicia. Imprenta de la Viuda e Hijos de Compañel, Santiago de Compostela, Spain.
- Chapman, M. A., S. Tang, D. Draeger, S. Nambeesan, H. Shaffer, J. G. Barb, S. J. Knapp, and J. M. Burke. 2012. Genetic analysis of floral symmetry in Van Gogh's sunflowers reveals independent recruitment of CYCLOIDEA genes in the Asteraceae. *Plos Genet* 8(3):1–10.
- Clemente, S. d. R. 1807. Ensayo sobre las variedades de la vid común que vegetan en Andalucía. Villalpando, Madrid, Spain.
- Daunay, M. C. and J. Janick. 2007. History and iconography of eggplant. *Chronica Horticulturae* 47(3):16–22.
- Díaz-Losada, E., A. Tato, I. Orriols-Fernández, A. M. Ramos-Cabrera, and S. Pereira-Lorenzo. 2013. New synonyms and homonyms for cultivars from Northwestern Spain. *American*



- Journal of Enology and Viticulture 64(1):156–162.
- Diéguez-Rodríguez, A. 2003. El retablo durante los siglos XVII y XVIII en el arciprestazgo de Monforte de Lemos (Lugo). Diputación Provincial, Lugo, Spain.
- Eiras Dias, J. E., C. A. Pereira, and J. P. Baptista da Cunha. 1988. Catálogo das castas. Instituto da Vinha e do Vinho. Estação Vitivinícola Nacional, Dois Portos, Portugal.
- Gago, P., J. L. Santiago, S. Boso, V. Alonso-Villaverde, M. S. Grando, and M. C. Martínez. 2009a. Biodiversity and characterization of twenty-two *Vitis vinifera* L. cultivars in the northwestern Iberian Peninsula. American Journal of Enology and Viticulture 60:293–301.
- , ———, ———, ———, and M. C. Martínez. 2009b. Grapevine (*Vitis vinifera* L.): Old varieties are reflected in works of art. Economic Botany 63(1):67–77.
- Galet, P. 1956. Cépages et vignobles de France. Vol I. Imprimerie Paul Déhan, Montpellier, France.
- . 2000. Dictionnaire encyclopédique des cépages. Éditeurs Hachette, Paris, France.
- García de los Salmones, N. 1912. Memoria sobre la reconstitución del viñedo en La Mancha. Establecimiento Tip. del Hospicio Provincial, Ciudad Real, Spain.
- García Iglesias, J. M. 1990. Galicia tiempos de barroco. Fundación Caixa Galicia, A Coruña, Spain.
- Hidalgo, L. 1993. Tratado de viticultura. Mundi Prensa, Madrid, Spain.
- Huetz de Lemp, A. 1967. Vignobles et vins du nord-ouest de L'Espagne. Vol. I–II. Institut de Géographie, Faculté des Lettres, Bordeaux, France.
- Johnson, H. 1989. Une histoire mondiale du vin. De l'Antiquité à nos jours. Hachette, Paris, France.
- Jovellanos, G. M. 1790–1801. Diarios (Anthology). Edited by J. M. Caso González. Barcelona, Spain: Planeta.
- Kelemen, P. 1951. Baroque and rococo in Latin America. Macmillan and Co., New York.
- Labrada, J. L. 1804. Descripción económica del Reyno de Galicia. Imprenta de Don Lorenzo José Riesgo, Ferrol, Spain.
- Loureiro, M. D., M. C. Martínez, J. M. Boursiquot, and P. This. 1998. Molecular marker analysis of *Vitis vinifera* 'Albariño' in some similar grapevine cultivars. Journal of the American Society of Horticultural Science 123(5):842–848.
- Martín, J. J. 1993. El retablo Barroco en España. Editorial Alpuerto, Madrid, Spain.
- Martínez, M. C. 2002. El Albariño. Ilustraciones sobre la variedad Albariño (*Vitis vinifera* L.). Servicio Publicaciones Diputación Provincial de Pontevedra, Vigo, Spain.
- and S. Grenan. 1999. A graphic reconstruction method of an average vine leaf. Agronomie 19:491–507.
- and J. E. Pérez. 2000. The forgotten vineyard of the Asturias Principedom (North of Spain): An ampelographic description of its cultivars (*Vitis vinifera* L.). American Journal of Enology and Viticulture 51:370–378.
- , J. L. G. Mantilla, and M. D. Loureiro. 1994. Descripción ampelográfica sobre hoja adulta de cepas de *Vitis vinifera* L. denominadas Albariño. Viticultura y Enología Profesional 34:30–40.
- , S. Boso, and J. L. Santiago. 2005. Los clones de Albariño (*Vitis vinifera* L.) seleccionados en el Consejo Superior de Investigaciones Científicas. Departamento de Publicaciones del CSIC, Madrid, Spain.
- Ministerio de Fomento. 1911. La invasión filoxérica en España y estado en 1909 de la reconstrucción del viñedo. Imprenta de los hijos de M.G. Hernández, Madrid, Spain.
- Organisation Internationale de la Vigne et du Vin (OIV). 2009. 2<sup>nde</sup> edition de la liste des descripteurs OIV pour les variétés et espèces de *Vitis*. <http://www.oiv.int/oiv/info/frpublicationoiv> (17 June 2013).
- Pacottet, P. 1928. Viticultura. Enciclopedia agrícola. Salvat, Barcelona, Spain.
- Paris, H. S. and J. Janick. 2005. Early evidence for the culinary use of squash flowers in Italy. Chronica Horticulturae 45(2):20–21.
- Posada, X. 1978. Os viños de Galicia. Galaxia, Vigo, Spain.
- Ramallo-Asensio, G. 1985. Escultura barroca en Asturias. Instituto de Estudios Asturianos, Oviedo, Spain.
- Ravaz, L. 1902. Les vignes américaines: Portegreffes et producteurs directs. Mason et Cie, Montpellier: Coulet et Fils; and Paris, France.
- Rodrigues, A. 1952. Um método filométrico de caracterização. Fundamentos descrição-técnica operatória. Serviço editorial da

- repartição de estudos, informação e propaganda, Lisboa, Portugal.
- Santiago, J. L., S. Boso, J. P. Martín, J. M. Ortiz, and M. C. Martínez. 2005a. Characterization and identification of grapevine (*Vitis vinifera* L.) cultivars from northwestern Spain using microsatellite markers and ampelometric methods. *Vitis* 44(2):67–72.
- , ———, M. C. Martínez, O. Pinto-Carnide, and J. M. Ortiz. 2005b. Ampelographic comparison of grape varieties (*Vitis vinifera* L.) grown in northwestern Spain and northern Portugal. *American Journal of Enology and Viticulture* 56:287–290.
- , ———, V. Alonso-Villaverde, and M. C. Martinez. 2007. Molecular and ampelographic characterisation of *Vitis vinifera* L. cvs. Albariño, Savagnin Blanc and Caiño Blanco shows that they are different cultivars. *Spanish Journal of Agricultural Research* 5(3):333–340.
- , ———, P. Gago, V. Alonso-Villaverde, and V. M. C. Martinez. 2008. A contribution to the maintenance of grapevine diversity: The rescue of Tinta Castañal (*Vitis vinifera* L.), a variety on the edge of extinction. *Scientia Horticulturae* 116(2):199–204.
- Suarez-Cantón, N. 1879. Asturias vinícola. Breves apuntes sobre el vino de Cangas de Tineo. *Revista de Asturias* 14:219–221.
- Tassie, L., M. C. Martínez, and J. M. Boursiquot. 2009. Varietal confusion: some facts on Albariño and Savagnin Blanc and vine identification methods. *Australian and New Zealand Grapegrower and Winemaker* 545:18–23.