

## Chapter 2

# Glera Grape Variety

The earliest documentation concerning the cultivation of Prosecco variety in the Veneto region dates back to 1754, with Aureliano Acanti, and to 1773, with Cosimo Villafranchi, who stated that the grape came from the Carso Triestino area, where there is a small town called Prosecco and where the Prosecco cultivars are still widely grown, under the name of Glera. The grape probably took its name from the commune of Prosecco, but towards the end of the 1700s and the beginning of the 1800s, Francesco Maria Malvolti and Giovanni Nardi noted the presence of the grape in the hills of Conegliano.

The 1870 “*Ampelografia Generale della Provincia di Treviso*” includes a Prosecco bianco, tersely defined as a “*favourite variety for fine wine*”.

Vianello and Carpenè, in their 1874 treatise “*La vite ed il vino in provincia di Treviso*” (Fig. 2.1), write of its diffusion, estimating its production at an overall total of some 3,700 hectolitres in the three districts of Conegliano (798 hl), Valdobbiadene (2,270 hl) and Asolo (641 hl).

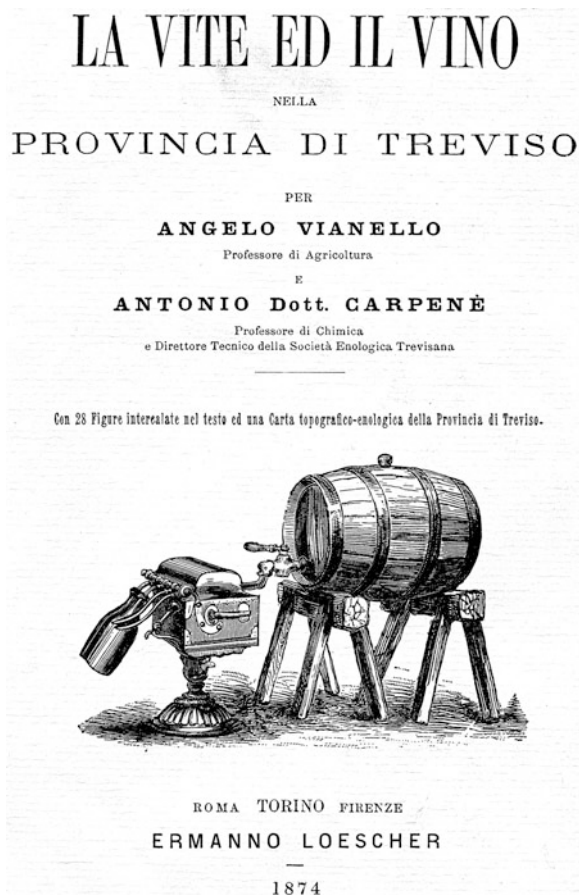
In 1868, with the establishment in Conegliano of the *Società Enologica* (Oenological Society), Prosecco assumed the role of a wine that merited attention and diffusion. Earl Marco Giulio Balbi Valier doubtlessly contributed to such promotional efforts, since he isolated and spread throughout the Solighetto hills a biotype with round berries that had a delicate aroma and flavours, tending to aromatic, and which was later (and still today) known as Prosecco Balbi (Fig. 2.2).

The 1887 “*Ampelografia Italiana*” mentions again Prosecco Balbi, stating that “*the berry size is quite irregular; in fact, in addition to medium-sized, rounded berries there are a great number of small ones as well*”.

Towards the end of the nineteenth century, however, the growing of Prosecco diminished, one reason being the spread of oïdium and peronospora, and its cultivation became focussed above all on Valdobbiadene, in Farra di Soligo, Follina and Col San Martino.

In 1907, in the “*Rivista della Scuola di Viticoltura ed Enologia di Conegliano*” (The Journal of the Viticulture and Oenology School of Conegliano), F. Antonio Sannino provided a rather detailed account of the Prosecco cultivars growing in the Treviso hills: “In the hill country in the province of Treviso, at the foot of the Pre-Alps,

**Fig. 2.1** Book cover of “*La vite ed il vino nella provincia di Treviso*” (1874)



where the finest white wines are made, the Prosecco tondo, or Prosecco Balbi, is cultivated, but it is relatively unproductive due to severe and consistent coulure...”

In more recent times, after World War II, Prosecco was given its first boost in development and its first protection by the law on the *Denominazioni di Origine dei Vini* (Delimitation of Wine Origins). In fact, the decree of 7 June 1969 defined “Prosecco di Conegliano e Valdobbiadene” as a white wine made from Prosecco variety produced in the Treviso hills.

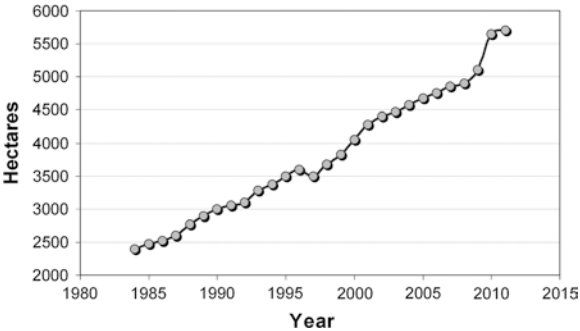
According to the 2000 Agriculture Census, some 4,000 ha in the DOC Prosecco di Conegliano e Valdobbiadene zone were planted to Prosecco. In 2005, that rose beyond 4,700, to become 5,700 in 2010 (Fig. 2.3). This figure indicates that Prosecco, in just a decade, witnessed a truly extraordinary expansion, constituting a real phenomenon. Currently (in 2012), 5,900 hectares are officially dedicated to DOCG Conegliano Valdobbiadene Prosecco.

Prosecco is a grape variety that buds out very early and ripens in Conegliano in the second–third week of September; it is notably vigorous, with good bud

**Fig. 2.2** Cluster of “Glera tonda” or “Glera Balbi”



**Fig. 2.3** Increase in the surface planted with Prosecco (now called Glera) in the DOCG Conegliano Valdobbiadene area



fruitfulness and a medium–high yield. It displays a certain sensitivity to peronospora, oïdium and flavescence dorée and little resistance to dry conditions.

Vineyards and their training systems are essentially of two types: Sylvoz predominates in the most fertile areas on mid and low hills and in the plain, with vineyard densities of 2,200–2,800 vines per hectare, while *doppio capovolto* or *cappuccina* (double-arched cane) is utilised in the hill-complex areas, planted at 3,000–3,500 vines/ha.

Both systems are well suited to the characteristics of the variety, allowing good yields and quality even in the most challenging pedoclimatic situations. Recent years have seen increasing densities and the adoption of Guyot with a single fruiting cane of 10–13 buds, which has likewise given satisfactory quality results.

Other experimental systems that require short pruning, such as spurred cordon, GDC and free cordon, have not always yielded good results, with respect to both quantity and quality.

The reason for the unfavourable results is doubtless due to the fact that Prosecco (now Glera) is a rather vigorous variety and that it tends quite easily to lose its vigour-fruit load balance because of its weak accumulation capability. In addition, its low basal node fruitfulness (first and second count nodes) does not suit it well to short-pruning methods such the spurred cane, which often pushes the variety into unacceptable high–low alternating yields.

Location of the vineyard too exercises a definite influence on crop quality.

Estimates indicate that some 40 % of the Prosecco rooted grafts purchased annually by grapegrowers are used for replacing dead or poorly performing vines in the vineyards, and 60 % are for completely new vineyards, most of them replacing older, grubbed-up vineyards. The widespread practice of in-vineyard vine replacement has influenced the choice of rootstocks, with preference falling on those showing a certain vigour, such as Kober 5 BB, 1103P and 110 R, all particularly suited to the driest and most challenging hillslopes; 420 A too is enjoying some use.

The ISV-Istituto *Sperimentale per la Viticoltura* (Experimental Institute for Viticulture, now CRA-VIT) began clonal selection of Prosecco towards the mid-1970s, aimed at experimenting with biotypes displaying the best vigour-fruit load balance, and consequently with more moderate vigour and higher sugar accumulations, with a loose cluster, and a natural lack of the main viruses.

At the current time, the following clonal selections are available to the grape-grower, all of them of the Balbi typology: ISV-ESAV 10; ISV-ESAV 14; ISV-ESAV 19; VCR 101; ISV-VA 4; ISV-VA 6; ISV-VA 7; ISV-VA 8; VCR 124. (VCR: Vivai Cooperativi Rauscedo).

## 2.1 Glera: The Reason for a New Name

The entire hill complex described in this text, with the decree of 17 July 2009, assumed the status of Denominazione di Origine Controllata e Garantita (DOCG) “Conegliano Valdobbiadene—Prosecco”, replacing its previous classification as Denominazione di Origine Controllata (DOC), granted in far-off 1969. The same decree granted to the 9 provinces in the Veneto and in Friuli-Venezia Giulia that had hitherto produced Prosecco IGT (Indicazione Geografica Tipica) the new status of Denominazione di Origine Controllata (DOC) Prosecco. Thus, there is a step up in quality recognition for both the DOC and the IGT.

Three factors led to this new situation:

1. The ancient winemaking traditions in these hills and the incredible renown that this wine has won over the years;
2. The significant spread in the cultivation of Glera onto the plains area;
3. The presence of the town named Prosecco located in the province of Trieste (Carso triestino), which was historically linked to the origin of the grape variety.

This made possible the transference of the name of the variety to the area, so that now the name Prosecco identifies both a DOC and DOCG wine and two growing areas. To shed further light on this matter, the decree of 22 April 2011 sanctioned the substitution for Prosecco variety of the name Glera, which was already listed in the National Register of Grape Varieties as a historical synonym of Prosecco. This move thus intended to avoid superimposing the name of a wine on its grape variety, thus granting a clearer identity to the wine: Prosecco is no longer the wine obtained from a grape variety but has become the wine of a specific growing area.

These official moves were taken by the Italian Ministry for Agricultural and Food Policies in complete collaboration with the European Union authorities, with the purpose of preventing imitation and exploitation of the name. Thus, a wine producer outside of the DOC and DOCG denominations may not use the term Prosecco on a wine label, but only the term Glera. This signifies that the term Prosecco is reserved exclusively for the DOC and DOCG production area.

## 2.2 In-Depth Treatment: Glera at a Glance

### Growth characteristics

Early bud break

Medium–high vigour

Medium–low resistance to dry conditions

Favours shooting from base buds (crown buds)

Poorly erect growth habit (recumbent)

Leaves sensitive to burns from high summer heat; phytotoxicity from antipest treatments (e.g. phosphites & copper)

### Crop characteristics

High crop yields

Low fruitfulness of the first two basal buds

Good ability to support high crop yields

### Quality characteristics

Average capacity for sugar accumulation

Rapid drop of malic acid during ripening stage

Elevated responsiveness of aromatic compounds to growing site and to weather conditions

Slow recovery from water stress after veraison

### Nutritional qualities

High sensitivity to lack of magnesium

Sensitive to lack of potassium

Medium–high sensitivity to stagnant water, perhaps associated with greater sensitivity to trunk diseases

### Health characteristics

Medium–high sensitivity to peronospora, oïdium, excoïose and Esca disease

Medium–low sensitivity to flavescence dorée, bois noir

### For maximum quality expression

Favour medium-fertile soils

In new plantings, use clonal selections, paying attention to type of wine desired

Use high-vigour rootstocks in poor soils (Kober 5 BB, 110 Richter, 1103 P) and medium-vigour rootstocks in deep soils (420 A, 161-49, SO4)

Avoid too-close spacing between vines (Sylvoz 1.3–1.5 m, cappuccina 1.2–1.3 m, simple Guyot 0.9–1.0 m, double Guyot 1.0–1.1 m)

Pay close attention to Mg/K ratio (best levels: 3–6) and to Fe content in soil

Prefer training systems with vertical canopy

Length of fruiting cane: 8–12 buds

With *cappuccina* (double-arched cane) avoid overly tight cane curvatures

Always avoid pruning old wood realising that the vine reacts to the cuts not by producing new scar tissue, but with the formation of necrotic blockages that compromise vine's vascular system

Late-spring soil fertilisations with nitrogen (mid-end-April, with ca. 25–35 units/ha)

Post-fruit set foliar fertilisations (not after end June–early July), based on calcium and potassium

Post-fruit set soil fertilisations with nitrogen (ca. 15–20 units/ha) in cases of stunted vineyards

In shallow or loose soils or in stunted vineyards, 20 units post-harvest nitrogen

Manage canopy with summer pruning, tying-up, leaf removal (mainly on the east face of the canopy); canopies with a minimum of 120 cm of vertical height

Avoid water stress between flowering and veraison

Calibrate fruit load to vine vigour

In newer plantings (first 5 years), immediately remove vines struck by flavescence dorée

Avoid standing water and soil compaction

## 2.3 In-Depth Treatment: Training Systems for Glera

The choice of a training system must be based on awareness that it will be the structure that can ensure an optimal relationship between vegetative growth and fruit load in a determined growing area and in the pursuit of desired winemaking objectives (Reynolds et al. 2009). There are, as a consequence, a number of general parameters that must apply to all training systems, namely:

1. Optimise exposure to sunlight of the leaves and clusters (Buttrose 1970; Gladstone and Dokoozlian 2003; Poni et al. 2003; Schultz 1995; Smart et al. 1985; Smart and Robinson 1991; Vanden Heuvel et al. 2002) avoiding excessive shading of the

canopy and fruit on the one hand and excessive temperatures on the clusters on the other hand (Belancic et al. 1995, Bergqvist et al. 2001, Lee et al. 2007, Spayd et al. 2002);

2. Create a balanced relationship between fruit and photosynthetically active foliage. Vine balance is defined as the appropriate relationship between vegetative growth and reproductive growth, quantified as ratio of yield to pruning weight (Bravdo et al. 1985, Ravaz 1904);
3. Optimise the relationship between grape quantity and quality, starting with the principle that optimal vine-training management reduces competition between quantity and quality as well as differences in terms of quality between the various training systems (Howell 2001; Peterlunger et al. 2002).

The morphologic and pedoclimatic features of the DOCG Prosecco area, combined with the genetic characteristics of the Glera variety and desired crop yield of 14–15 t/ha, mean that the choice of a training system is reduced to just a few possibilities:

1. Sylvoz (Fig. 2.4)
2. Double-arched cane (*cappuccina*) (Fig. 2.5)
3. Single or double Guyot (Fig. 2.6)

These three vertically trellised systems are characterised by leaving a fruiting cane of 11–13 buds and by upward-tending growth, but they are differentiated by the number of canes, by their arrangement in space and by the volume occupied by the vegetation. Consequently, each of the three systems exhibits row widths and support structures different from the others and thus different crop loads per vine as well. More modern systems, such as GDC, free cordon and spurred cordon, although they are better suited to mechanisation, are not suited to the hillslope environment, where terrain relief is hostile to easy use of mechanised equipment. But, even more to the point, the spur pruning common to these systems and the vigour of the Glera do not always yield consistent, and continuous results (cf. lack of fruitfulness of the basal nodes–first two count nodes), resulting

**Fig. 2.4** Sylvoz training system for Glera grape variety





**Fig. 2.5** Double-arched cane (*cappuccina*) training system for Glera



**Fig. 2.6** Single Guyot training system for Glera

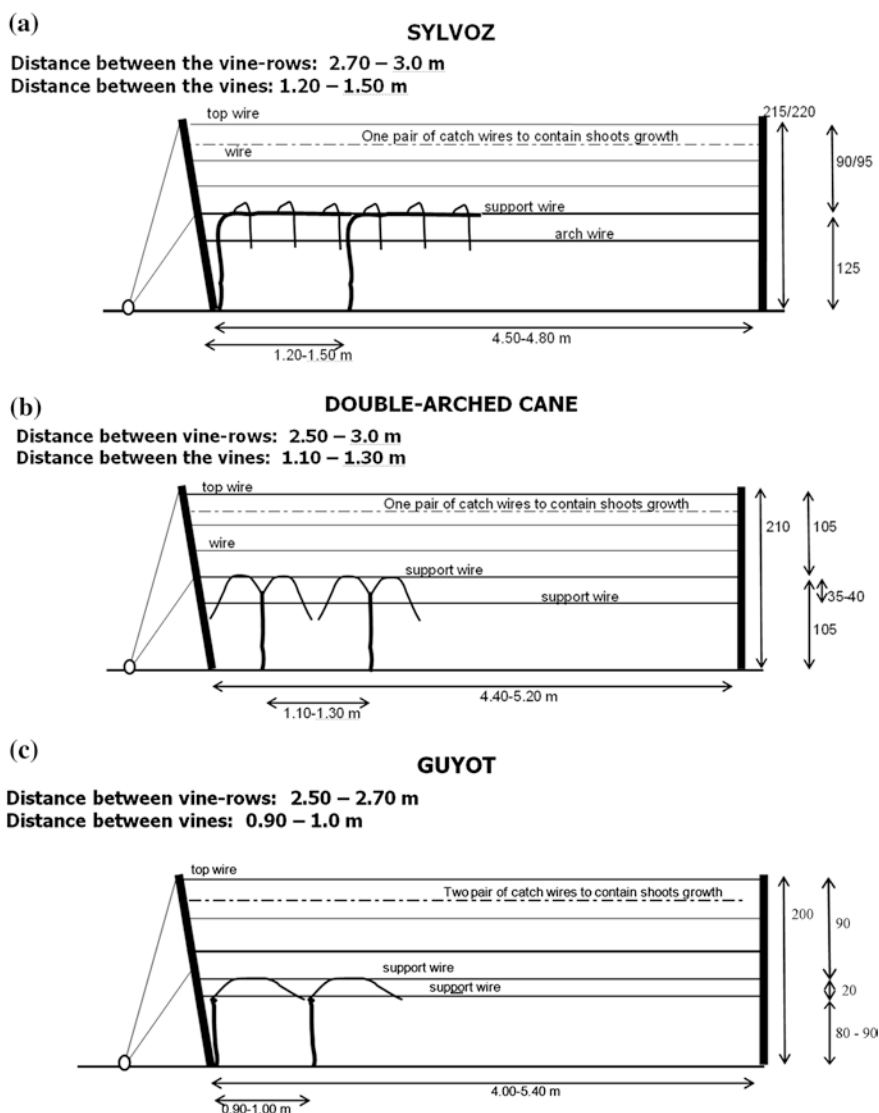


instead in alternating yields that are not consistent over the years. However, a careful mechanical pruning to canes of 5–6 buds, followed by manual follow-up that monitors and saves some fruiting canes, can contribute to solving this particular problem.

The training methods commonly utilised then are those that present a canopy with a long fruiting cane, with the vegetation vertically supported by wires. Canopy management has taken on great importance over the last few years, since evidence shows that good illumination of the leaves and clusters yields healthier, riper and better quality fruit. Thus, use is always made of one or two pairs of movable support wires for the shoots and, in particular, to create a curtain at least 120 cm in height (90 cm from the main support wire to the top wire).

In the more vigorous soils of mid- to low hillslope, Sylvos is recommended, since it can accommodate greater growth thrust and maintain over time the correct vine vigour-fruit load ratio; Kober 5 BB and 110 Richter seem to be the most





**Fig. 2.7** Diagrams of Sylvoz (a), double-arched cane (b) and Guyot (c) training systems suitable for Glera grape variety

suitable rootstocks. In poor or shallower soils, and on more challenging slopes, the double-arched cane is better, since it works well with denser plantings and adapts to lower vigour and less expansion by the vine. The double-arched cane (capucina) poses a problem when it is used in richer soils, since the high vigour of the Glera stimulates bud growth on the curvature of the canes rather than at the basal cane nodes and the vine thus loses over time correct canopy height. The tighter the

curve on the two fruiting canes, the more frequent this problem becomes, and for this reason, pruning must be carried out by expert crews and in vineyards that are not vigorous.

In situations where the goal is well-balanced growth, even in deep soils and with vigorous vines, with moderate crop levels and increased sugar accumulations, single or double Guyot can be a valid alternative to Sylvoz and to the double-arched cane, particularly when it is grafted onto a non-vigorous rootstock (e.g. 420 A). With Guyot, however, in order to ensure better-balanced growth, the fruiting cane should be curved along the row axis and with no apical growth in the extended areas of the shoot.

The correct selection of the training system, and of the rootstock, becomes even more important in situations where unbalanced vineyards may be at risk from fungal, viral or microplasmic diseases (Esca disease bois noir and flavescence dorée).

In addition to the training system, vineyard density is an important concern. The inter-vine distance is conditioned by the training system, but this is not true of the inter-row spacing, which depend on other factors, in particular on the selected layout, on soil morphology and on vineyard equipment requirements. In Fig. 2.7 are diagrams of the three just-treated training systems, with the most appropriate layouts.

## Bibliography

- AA VV (1870) *Ampelografia Generale Della Provincia Di Treviso*. Comizio agrario di Conegliano
- Acanti A (1754) *Il roccolo, ditirambo*. Pezzana, Venezia
- Belancic A, Agosin E, Ibacache A, Bordeu E, Baumes R, Razungles A, Bayonove C (1995) Influence of sun exposure on the aromatic composition of chilean Muscat grape cultivars Moscatel de Alejandria and Moscatel rosada. *Am J Enol Vitic* 48:181–186
- Bergqvist J, Dokoozlian N, Ebisuda N (2001) Sunlight exposure and temperature effects on berry growth and composition of Cabernet Sauvignon and Grenache in the central San Joaquin Valley in California. *Am J Enol Vitic* 52:1–7
- Bravdo B, Hepner Y, Loinger C, Cohen S, Tabacman H (1985) Effect of crop level and crop load on growth, yield, must and wine composition, and quality of Cabernet Sauvignon. *Am J Enol Vitic* 36:125–131
- Buttrose MS (1970) Fruitfulness in grapevines: the response of different cultivars to light, temperature and day length. *Vitis* 9:121–125
- Gladstone EA, Dokoozlian NK (2003) Influence of leaf area density and trellis/training system on the microclimate within grapevine canopies. *Vitis* 42:123–131
- Howell GS (2001) Sustainable grape productivity and the growth-yield relationship: a review. *Am J Enol Vitic* 52:165–174
- Lee SH, Seo MJ, Riu M, Cotta JP, Block DE, Dokoozlian NK, Ebeler SE (2007) Vine microclimate and norisoprenoid concentration in Cabernet Sauvignon grapes and wines. *Am J Enol Vitic* 58:291–301
- Peterlunger E, Celotti E, Da Dalt G, Stefanelli S, Gollino G, Zironi R (2002) Effect of training system on Pinot noir grape and wine composition. *Am J Enol Vitic* 53:14–18
- Poni S, Magnanini E, Bernizzoni F (2003) Degree of correlation between total light interception and whole-canopy net CO<sub>2</sub> exchange rate in two grapevine growth system. *Aust J Grape Wine Res* 9:2–11

- Ravaz L (1904) *La brunissure*. Coulet éditeur, Montpellier
- Reynolds AG, Vanden Heuvel JE (2009) Influence of grapevine training systems on vine growth and fruit composition: a review. *Am J Enol Vitic* 60(3):251–268
- Sannino FA (1907) *Rivista di Viticoltura e di Enologia di Conegliano*. 13:s. 4
- Schultz HR (1995) Grape canopy structure, light microclimate and photosynthesis. I. A two-dimensional model of the spatial distribution of surface area densities and leaf ages in two canopy systems. *Vitis* 34:211–215
- Smart RE, Robinson M (1991) *Sunlight into wine: a handbook for winegrape canopy management*. Winetitles, Underdale
- Smart RE, Robinson GB, Due GR, Brien CJ (1985) Canopy microclimate modification for the cultivar Shiraz. I. Definition of canopy microclimate. *Vitis* 24:17–31
- Spayd SE, Tarara JM, Mee DL, Ferguston JC (2002) Separation of sunlight and temperature effects on the composition of *Vitis vinifera* cv. Merlot berries. *Am J Enol Vitic* 53:171–182
- Vanden Heuvel JE, Leonardos ED, Proctor JTA, Fisher KH, Sullivan JA (2002) Translocation and partitioning patterns of  $^{14}\text{C}$  photoassimilate from light- and shade-adapted shoots in greenhouse-grown ‘Chardonnay’ grapevines (*Vitis vinifera* L.). *J Am Soc Hortic Sci* 127:912–918
- Vianello A, Carpenè A (1874) *La vite e il vino in Provincia di Treviso*. Ermanno Loescher Editore
- Villifranchi C (1773) *Oenologia Toscana, o sia memoria sopra i vini ed in specie toscani*. G. Cambiagi, Firenze

The Power of the Terroir: the Case Study of Prosecco  
Wine

Tomasi, D.; Gaiotti, F.; Jones, G.V.

2013, X, 248 p. 185 illus., 95 illus. in color., Hardcover

ISBN: 978-3-0348-0627-5