CHOICE OF PRUNING SYSTEMS

The basis for pruning system selection is the inherent cluster size of the scion variety. A variety with small cluster (flowers not berries) will require more total buds to balance the vine compared to a large clustered variety. This increases bud fruitiness and reduces the chance of *Eutypa lata*, which invades the vine through pruning wounds. Cabernet Sauvignon is very susceptible to *Eutypa lata*.

SMALL-CLUSTERED VARIETIES

REDS:	**Cabernet Sauvignon**	**WHITES:**	**Chardonnay**
	Cabernet Franc		**Sauvignon blanc**
	Merlot		**Pinot Gris**
	Pinot noir		**Riesling**
	Malbec		**Gewürztraminer**

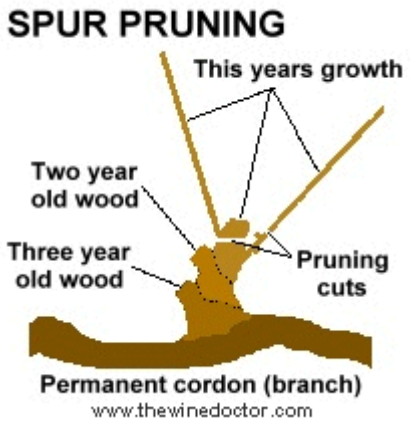
LARGE-CLUSTERED VARIETIES

REDS:	**Petite Sirah**	**WHITES:**	**Chenin blanc**
	Syrah		**Semillon**
	Zinfandel		**Pinot blanc**

Dr. Steve Krebs, Napa Valley College, January 1996

Pruning Techniques

Before describing vine-training methods, it is useful to consider the two main pruning techniques that are used by the vineyardist. This is because many of the methods are simply variations on a theme, for example the development of a cane pruning technique, e.g., the Scott Henry system into a spur pruning technique and the Smart Dyson.

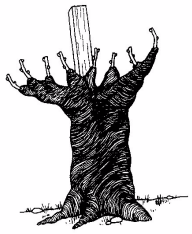


Spur pruning

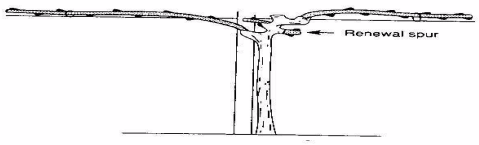
There are two fruiting canes (this years growth) originating from each spur (a cane shortened, usually to two nodes, although it may be between one and four nodes, in the previous years pruning). The cane furthest away from the cordon is completely removed, the one nearest is shortened to two nodes to produce next years spur, which will generate the two new fruiting canes. There are a number of spurs along the cordon, providing sufficient quantity of fruit.

Cane pruning:
Here the vine has a two-year-old cane that generates many more fruiting canes during the growing season, and a spur giving origin to two canes. At pruning the two-year-old cane, and consequently much of this years growth, are completely removed. Of the two canes originating from the spur, the one closest to the cordon is pruned to leave a replacement two-node spur, whereas the cane further away is left intact, although shortened. This is next year's two-year-old cane.

Goblet

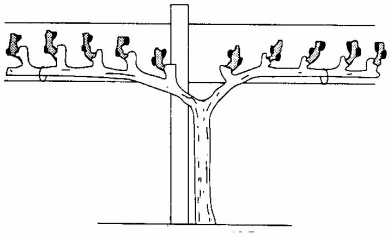


Literally translating as 'goblet', this ancient method of vine training involves no wires or other system of support, and results in a goblet shaped growth. The trunk of the vine is kept short at about 0.5m, and it is crowned by a knarled lump of old wood, which is the result of years of **spur pruning** the few branches at the head of the trunk. Vines trained in this manner, referred to as 'head training', essentially resemble a small bush or shrub, and they may be described by some as 'bush vines'. They are best suited to warm, dry climates, without fertile soil. This is because there is an increased risk of rot in humid environments, as the bushy architecture of the vine inhibits evaporation of water from the fruit and foliage. In fertile soil the foliage may be so prolific as to dangle on to the ground, and this is also undesirable. Consequently they are often found in warm, long-established (nutrient-depleted) vineyards of the Old World, such as the southern parts of Burgundy, the Rhône Valley, Provence and Languedoc.
Guyot



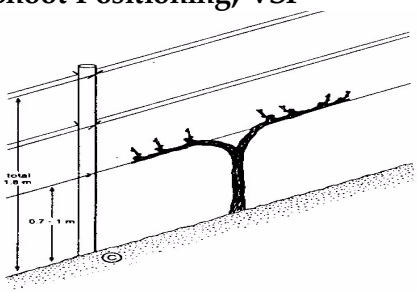
Named after Dr Jules Guyot, a 19th century French scientist, this system is essentially **cane pruning**, as described above. In *Single Guyot*, each vine has one cane preserved each year, for the generation of next years many fruiting canes, and one spur, which is for the generation of the replacement cane. In *Double Guyot*, which is a system widely used in Bordeaux, each vine has two canes and two spurs, the canes being trained in opposite directions along wires. The best way to handle small clustered varieties may be with the head training, cane pruning *Double Guyot*.

Cordon training



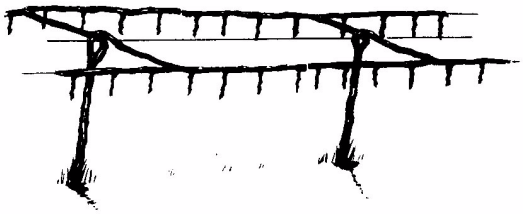
With this method the vines have a short trunk, about 0.5m, similar to the goblet style. Instead of head training, however, a permanent branch, or 'cordon', is trained along a wire on one side of the vine. The cordon, which is never pruned away, bears a number of spurs (how many often depends on appellation laws in France), which are subject to **spur pruning**. The cordons may be one (unilateral cordon) or two (bilateral cordon) in number. The bilateral cordon is the most commonly encountered, but the unilateral method is becoming increasingly popular as a relatively easy method of vine training. A significant advantage of cordon training is its suitability to mechanical pruning, as the spurs are all at a very similar height along the cordon. The unilateral method is also sometimes referred to as *Cordon de Royat*, named after the French agricultural school Royat.

Vertical Shoot Positioning, VSP



With this long established system, the fruiting canes are trained upwards from the trunk, and it is thus also known as *vertical trellising*. The canes are supported by securing them to a number of trellis wires running the length of the row of vines. The canes may be trimmed off at the top, and consequently the row takes on a hedge-like appearance. It may be **spur** or **cane pruned**. This system may be seen in Bordeaux, Burgundy and Champagne, using a short trunk with close planting to increase vine stress. In Alsace, Germany and the New World it is employed using a higher trunk.

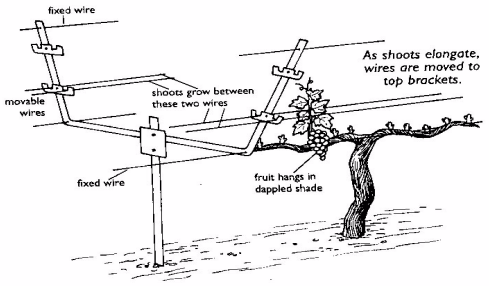
Geneva double curtain



Professor Nelson Shaulis, of Pennsylvania, who developed it whilst working at the Geneva Agricultural Experiment Station in New York, developed this method in the 1960's. It is also referred to simply as

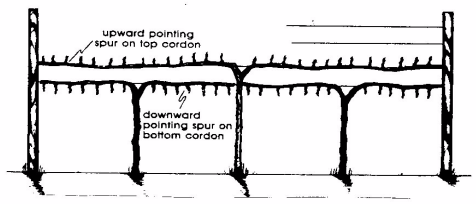
GDC. The concept aims to improve grape quality by reducing shade within a dense canopy, by dividing the mass of foliage into two. The trunk is grown high, about 1.5m. From this two permanent cordons grow, each one trained out to run along a supporting wire, approximately 1.3m apart. Along the cordon are the **spurs** that produce the fruiting canes, which hang down towards the ground. Hence the canopy has been divided into two 'curtains', improving exposure to light, quality of fruit and yield. It is particularly useful for vines of high vigor. The method has been more widely used in the New World than the Old, the latter being subject to strict regulations regarding yields.

Lyre



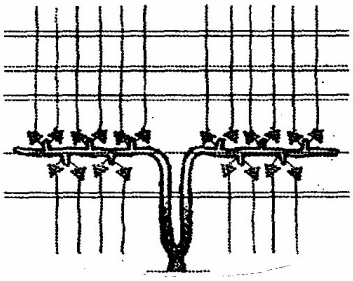
A development of the Geneva double curtain, the Lyre system was the work of Dr Alain Carbonneau, Professor of Viticulture at Montpellier. It came about in the 1980's, and its principle advantages are improvement to the canopy microclimate resulting in less shading of foliage and fruit. Like the GDC, the trunk is divided into two cordons, although at a lesser height, perhaps 1.0m. At this level the cordons are grown along the two parallel wires, but the fruiting canes are grown upward, rather than allowed to dangle down, producing a lyre shape when the row of vines is viewed end-on. Unlike the GDC, it is preferred for medium vigor vines. Although an obvious candidate for **spur pruning**, it may also be **cane pruned**.

Scott Henry



This system for vine training is essentially a variation on the Double Guyot system. It was developed by Oregon winemaker, and retired aerospace engineer, Scott Henry, and thus named. His aim was to improve fruit quality and yield from over-vigorous vines, which would otherwise produce masses of foliage rather than bunches of grapes. From the cordon four canes emerge, two running away from the trunk in each direction, trained along wires. The fruiting canes of the upper cane are trained upwards, whereas those of the lower cane are allowed to fall downwards. It is, like the Guyot systems, subject to **cane pruning**, although there is a similar training method for spur pruning (see the Smart Dyson method). The single, high curtain of vine is particularly amenable to mechanical harvesting, and this, together with the benefits concerning yield and quality, has led to the Scott Henry method being widely adopted throughout the New World.

Smart Dyson



Essentially very similar to the Scott Henry system, this system uses cordon training, with two cordons either side of the trunk. Each cordon bears a number of spurs, which produce the fruiting canes. As always, the cordons are permanent, and the system is subject to **spur pruning**. This method is also very suitable for mechanical harvesting, but, like other methods of cordon training, it also has the advantage of being suitable for mechanical pruning, and consequently has gained favor in the New World. It is named after the developers, Richard Smart and John Dyson.

Conclusion

This is merely an overview of the most common methods of vine training. There are dozens of other techniques that may be employed, including some that are seen in specific European regions such as Italy (the tendone system) and Germany (the halbbogen and doppelbogen systems). To cover them all, however, would hardly be feasible, especially as many of these systems are falling out of use where wine grapes are concerned, as vineyardists switch to more modern methods. This is particularly true of those who have land suitable for mechanization, such as many Italian vineyards. In the steep, sometimes precipitous vineyards along the Mosel and Rhine, however, there is less incentive for change.

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