Development of the Vine Framework

MARK WHISSON
Trio Point Viticultural Consultancy, Carey Gully, SA

The training method that we use has been developed over the last nine years by trial and observation, not by scientific proofs. This method gives better results than any other method that we have tried under our local conditions and our management regime. (We aim to produce a strong vine with bilateral cordons.)

Regional problems
The Piccadilly Valley is a cool growing region. We experience low temperatures and this is reflected by the budburst dates of the two most commonly grown varieties. Young vineyards generally only grow rapidly during the second half of December, January, February and the first half of March, and even during these months will grow much faster if night time minima are above 15°C.

We also have pest and disease problems to deal with:

- Animal pests do not present major problems. LBA M and vine moth are easily controlled by picking off during training, wingless grasshoppers and grazing wood ducks are impossible to control but do no damage unless the vines have not got past the dripper wire by early December, and these are very uncommon.
- Fungal diseases. Botrytis is always present in the Piccadilly Valley and is therefore expected and easily dealt with by a curative spray in February. Downy mildew is rare at Piccadilly because the nights are usually too cool, but it can occur and also is readily controlled with a curative.
- Weeds. Fat hen, wild turnips, marshmallow, cape weed, blackberries, bracken and so forth are all problems in young vineyards, primarily because they are not well controlled by herbicides and also because the average monthly rainfall during summer is about 25 mm.

Aims of training
The primary aims of training are:

1. A tain a suitable vine shape.
2. Grow as much crop as soon as possible.
3. Minimise costs.

Training methods

Sprawl
The original training method is no doubt the sprawl method—which is the training system you have when you don't have a training system! The young vine is left to sprawl as it wishes during the first year. At pruning the best shoot is brought to the cordon wire and headed off. All other shoots are cut off. During the following growing season a shoot from each of two primary buds is used to form each of the two new arms.

Pinch tip
The classic pinch tip method. Shortly after budburst all shoots except the strongest one are broken out. This one shoot is brought up to the wire (in our vineyards, on a string) and headed off as or after it reaches the cordon wire. At the same time as heading off, all laterals are broken out with the exception of two (or three) uppermost laterals which then grow and are trained along the wire to form the cordon.

Taping and tipping (T & T)
There is a third method which we have evolved over the last eight years to suit our circumstances and which appears on our customer monthly invoices as T & T training. The objective is to grow as many leaves as possible to maximise root growth, while still allowing machine access and developing the vine framework.

To achieve this we take the new vine trunk and cordon onto the string and wire with a taping gun and encourage growth in the trunk and new cordon by tipping the unwanted shoots. So we do not pull working leaves off the wire. When the leader reaches the cordon wire it is turned downhill and run along the wire. In other words, we do not remove the apical growing tip.

The main differences are therefore that we do not remove leaves—leaves are the organs that power vine growth, therefore pulling them off is a backward step in our area. If we could trim our vines every few days we would not have leaves in unwanted places, but that is not usually possible, so we prefer to make use of any leaves that the vine has used energy to grow. The second and just as important difference in this system is that the vine always has an apical growing tip. Plant physiology is controlled by growth factors that are synthesized by various plant organs in response to environmental factors. Removal of the apical tip triggers a period of no growth in the young vine. In Piccadilly this lasts for 3–4 weeks, which is usually almost one-third of the total growing season.

Advantages of each method

Sprawl
• Very low training costs, i.e. no costs.
• Some people will defer their trellising costs until the following winter.
• Maximum root growth due to maximum canopy growth and no checking of growth.
• Probability of a good crop in the third season, which of cause is due to good root growth.

Pinch tip
• Aesthetics—vines trained by the pinch tip method are symmetrical and neat, which can be important in some circumstances.
• The owner will be regarded by the local community as a good employer!
• Very low pruning costs—because the framework is formed during summer. The young vine just needs to be cut back and wired down.
• Easy pest control due to good machinery access and small canopies.

T & T
• Training costs are lower than that of the pinch tip method, due to less time and less skill required.
• Maximum root system growth due to more canopy and no checking.
• Relatively easy pest control due to good machinery access, although the canopies are much denser than that of the pinch tip methods.
• Gives the largest and earliest first crop.

Disadvantages of each method

Sprawl
• Relatively high pruning costs – minor compared to training costs.
• Poor machinery access in narrow rows, together with leaves in the inter-rows, which results in difficult pest control.
• Probable root damage in Piccadilly due to the combination of wind and soil causing ‘vine gyration’.
• There is no chance of a crop in the second season.

Pinch tip
• High labour costs due to the time and the skill levels required.
• Restricted root growth due to the small number of leaves produced.
• Restricted root growth due to the loss of 3–4 weeks growth due to the loss of the apical tip.

T & T
• Higher pruning costs – small but significant cost.
• Pest control can be a bit more expensive due to the dense canopy.
• To many eyes the vineyard will not look tidy.

Summary
In our area and under our management system, the T & T method will give best root growth, has the greatest chance of an early crop and has reasonable training and pest control costs.

Around Piccadilly we have vineyards that have never really cropped well and they are usually vineyards that grew poorly when young. We also have vineyards which crop well almost every year and they are generally vineyards that grew strongly when they were young. Perhaps this is a result of how much of the shattered soil volume is filled by the young vine roots in the first season before the soil settles again.

The viability of grape growing in cool climates is marginal. It is quite probable that a vineyard that does not grow strongly in its first season may never be a profitable investment.

Training
Once a vine has been planted and has begun to grow actively, attention needs to be paid to the task of training it up to the wire. There are basically two alternatives, letting the vine sprawl for the first year, or training to the wire as soon as possible.

Sprawl: If this procedure is used, the strongest shoot is retained in the following season and pruned to two nodes. All other shoots are removed. Form the trunk from the strongest and best angled shoot that develops in the second season. The advantages of this system are that the increased vigour from second year growth ensures a stronger, straighter trunk, less disbudding is required, most vines will reach the wire in the second year resulting in a more uniform planting.

First year training: Provided vines are sufficiently vigorous— which rootstocks usually are—this is the technique preferred by most growers. It requires more intensive training and disbudding but these costs are more than offset by the earlier cash return generated.

When training remember to select the most vigorous shoot to form the trunk (provided it is in a suitable position) and make sure that the string does not strangle the young vine, a particular problem with rootstocks. A wire loop placed in the ground beside the vine is a good option to avoid this problem. There are also commercial ground anchor devices available.

Conclusion
The operations of vine planting and management are critical to achieving the maximum yields from a vineyard. There are a number of discrete tasks which must be successfully completed if the vine is to grow rapidly in its early stages and neglecting any of the tasks will reduce vine performance.

Management of young vines is time consuming, so make sure sufficient time is planned for to get it right.

Reference