Help! What cultivar (or clone) is this?

While growers and winemakers generally know which grape cultivars they are growing or making into wine, there are a range of scenarios where it is important to be able to definitively identify a rootstock or scion. Accurate cultivar identification is essential for nursery operators as part of their quality assurance programs.

IF RECORDS HAVE BEEN LOST, growers can often want to confirm which rootstock has been used, especially if it is performing particularly well (or poorly), or if the block was previously top-worked and they are considering returning it to the original cultivar.

Wineries can also sometimes need assurance that the fruit that has been delivered is the specified cultivar. If a cultivar is identified on the label, then the producer is legally bound to ensure that the correct fruit was used to make the wine.

WHAT IS AMPELOGRAPHY?

Ampelography is the study of the identification and classification of grapevines. Traditionally this has been done by examining the shape and colour of the vine leaves, shoot tips and grape berries.

There are books and computer programs available to assist with vine identification; however considerable skill, training and experience are still required to accurately identify grapevine cultivars. Some distinct cultivars may be able to be identified from photos, but to be confident enough to place the name of the cultivar on a wine label most producers would hire an ampelographer to visit the vineyard in person.

CAN DNA BE USED TO IDENTIFY CULTIVARS?

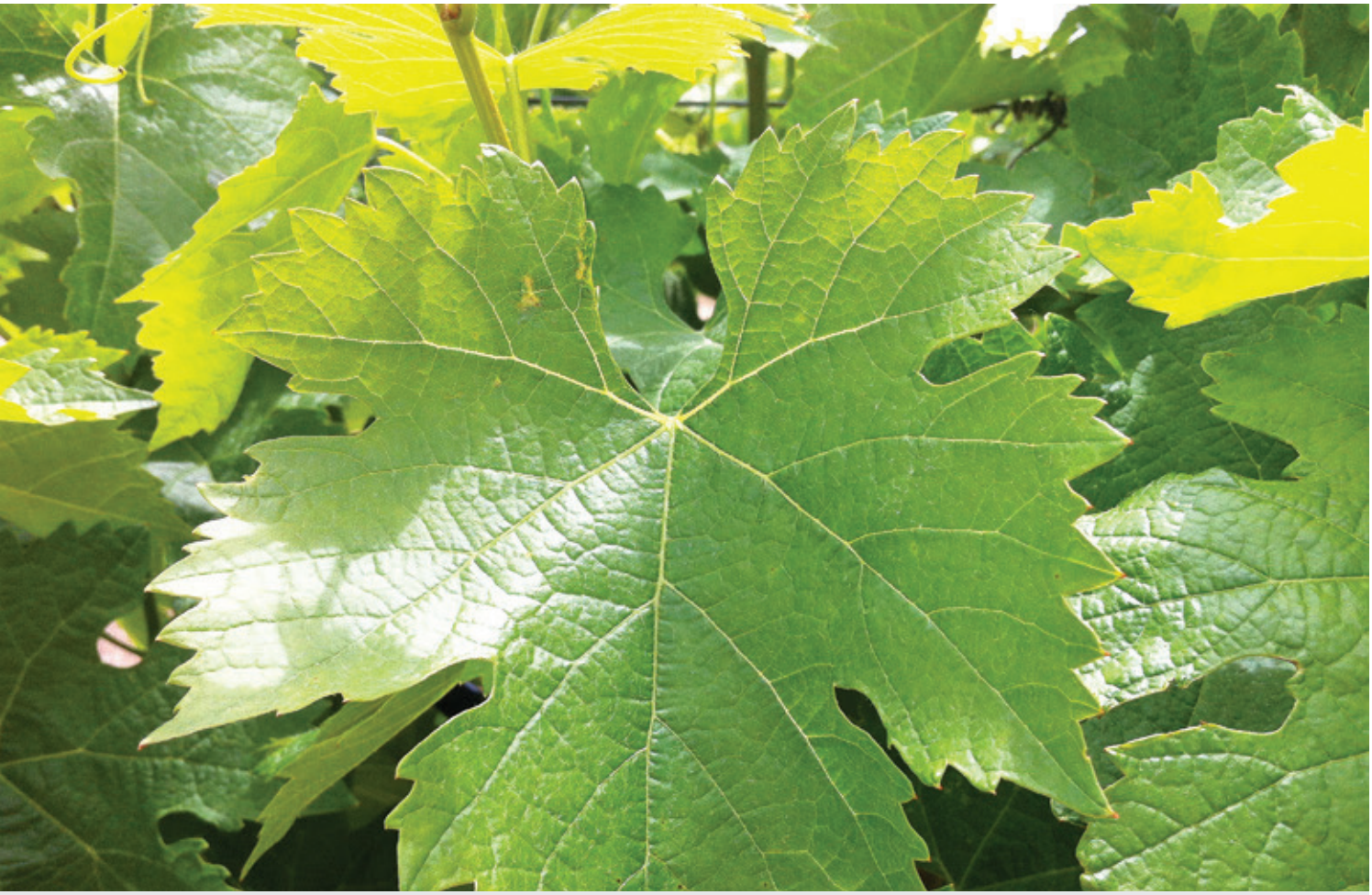
In many cases mature leaves and fruit, and especially young shoot tips, are not available to aid with the identification of a cultivar by ampelography. This is where the use of DNA analysis as a commercial service has revolutionised the identification of grape cultivars across the past 15 years.

While younger, actively-growing material is preferred, a DNA test can be undertaken on virtually any living part of a vine.

DNA testing is a great tool, but there are a couple of points that users need to be aware of.

The accuracy of the identification depends on the validation of the reference vine; that is, if a reference vine in a database has been incorrectly identified then the misidentification will be perpetuated.

Likewise, if the vine needing identification is not recorded in the reference database of the DNA testing service, then it cannot be identified.



What cultivar is this? If you said Temapranillo, give yourelf a pat on the back.

So if you have a suspicion of the variety you are trying to identify then it pays to confirm that it is included in the database of the testing service.

One of the other limitations of DNA testing is that it can only identify one vine or piece of plant material.

So if you select a piece of rachis or leaf from the top of a bin of fruit and have it analysed, then you can be confident of the identification of that specific piece, but not the rest of the bin. Likewise, you can identify one plant in a vineyard, but you would then need to complete a visual inspection on the rest of the block to confirm that it is true to type.

IS IT POSSIBLE TO DISTINGUISH BETWEEN DIFFERENT CLONES?

Whenever a grape seed grows into a plant, a new cultivar is created, which can have different characteristics from the parent grapevines. In a similar manner, if you plant a seed from a peach or an avocado, the tree that grows will not necessarily produce edible fruit.

By comparison, when vines are propagated using cuttings, this preserves the original cultivar, by creating a clone of the original vine. However, over time and propagation cycles, spontaneous mutations will accumulate in the vine's DNA and these can lead to subtle differences in vine growth between clones. Clonal selection can then be based on attributes such as phenology, productivity, morphology, flavour, aroma or disease resistance.

The selection of the appropriate clone is an important decision for any new planting. Unfortunately distinguishing between clones is very difficult using traditional ampelography, as the morphological differences are subtle or only expressed as an average over a number of seasons.

There are research reports of the successful differentiation of limited sets of clones using genetic markers; however, reference databases have not yet been developed that allow the identity of an unknown clone to be confirmed.

This means that a commercial clone identification service is not readily available, but there is at least one laboratory planning to offer this type of service in the near future. Another approach is to sequence the entire genome of the clone that you are interested in.

The AWRI is currently collaborating with the South Australian Research and Development Institute to compare genomes of a range of Chardonnay clones. The cost of this technology continues to fall and one day it may be the preferred method for clonal identification.

The AWRI helpdesk provides a free-of-charge advice service to Australia's grapegrowers and winemakers who pay the Winegrapes and/or Grape Research levies. Advice is available on winemaking, viticulture, regulatory and health-related issues from experienced winemakers, viticulturists and scientists.

The AWRI helpdesk also offers an investigative service for problems that cannot be resolved by advice over the phone or by email. Samples of grapes or wine can be sent in for independent analysis and interpretation to determine the root cause of an issue, with a formal report prepared if required.

For more information, contact the helpdesk:
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