Quality Matters: Good planting material is an Important Part of the Vine Health System

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Starting out........

• So, you have a bullet proof market position, rock solid terroir and have employed the best viticulturist and winemaker...

• Now you need the vines that will enable you to achieve your goals.
Why is Quality Important?

• The value of good quality planting material cannot be over estimated.
• Quality vines are the foundation of productive, economically viable vineyards.
• Well managed, quality vines consistently produce high quality fruit that is a true expression of the variety and site.
Vine Quality

• Good quality vines establish quickly and result in even, long lived vineyards that produce consistent yields with minimum inputs.

• Poor quality vines fail, or are slow to establish and less productive.

• Poor quality vines add significantly to the cost of vineyard establishment and on going management.
Effects of Vine Quality - Good and Poor Vineyard Establishment
A Quality Vine

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Costs of Poor Quality Vines

- Replanting
- Slow and uneven establishment requiring more training passes
- More water and fertilizer
- Reduced yield
- Reduced fruit quality
Effects of Poor Quality Vines

- Vines of uneven vigour
- Vines can be infected with serious endogenous diseases (trunk diseases and viruses) that reduce grape yield and quality for the life of the vineyard
- Greater susceptibility to other pests and diseases
- Shorter vineyard life
What is a Quality Vine?

- A quality vine is one that performs to expectations in the vineyard with minimum inputs.
- A quality vine has both visible and intrinsic characteristics.
- The appearance of a vine is a helpful initial guide to its quality, but does not tell you everything you need to know.
Visible Indicators of Good Quality

• Sound
  – not damaged by machinery or vermin
  – a fully healed graft union that is not contaminated or over callused

• Good plant architecture
  – at least 3 evenly spaced well developed roots
  – 1 or 2 strong shoots with plump well formed buds
Visible Indicators of Good Quality

• Healthy appearance
  – Good bright colour, not wet and blackened, mouldy, or dried out.
  – No signs of insects, nematodes, powdery mildew traces or, phomopsis.
  – Vines of even size

• Clean earthy odour

• Labelled with variety, clone and rootstock
Good Quality Grafts
Intrinsic Indicators of Vine Quality

- **Known virus status**
  - Not infected with serious viruses such as fan leaf or leaf roll

- **Free of other serious pathogens**
  - Not infected with Petri disease, crown gall or AGY

- **True to type**
  - Is the correct variety, clone and rootstock

- **From a registered source block**
  - Vines are inspected regularly for diseases and off types
Intrinsic Indicators of Vine Quality

• Not exposed to environmental stress
  – Pesticides, herbicides, high temperatures, petroleum products and other agrochemicals

• Handled and transported correctly
  – Not left in storage depots, exposed to high temperatures etc.

• Traceable
  – There are good records and the vine can be traced through all processes from the source block to the vineyard
Indicators of Poor Quality

- Packaged vines black, sodden and/or covered in mould
- A “winey” odour on opening packages (this indicates that the vines are fermenting)
- Vines damaged by vermin or machinery
Indicators of Poor Quality

- Incomplete, weak, or contaminated graft unions
  - Tissue inside contaminated graft unions is blackened with streaking in the rootstock and scion wood leading away from the graft union.
  - Contaminants including dirt, grease and microorganisms, interfere with graft healing, reduce vigour and cause disease.
Indicators of Poor Quality

• Visible signs of powdery mildew, phomopsis and very bleached canes

• Vines undersize (<7mm diameter, < 3 good roots, spindly shoot)

• Vines oversize (>12mm diameter)

• Ungraded vines of widely varying sizes
Indicators of Poor Quality

- Vines are slow to shoot or die shortly after planting
- Vines with symptoms of endogenous diseases within 2 seasons of planting
- From unregistered and/or uninspected source blocks
- No labels, or labels do not indicate variety, clone and rootstock
- Vines not traceable to source
Mouldy fermenting vines
Poor Quality Contaminated Grafts
Poor Quality Graft Strangled With Budding Tape
Poor Quality Grafts

Contaminated poorly healed graft

Browning in rootstock probably caused by Petri disease or other pathogenic fungi
Getting the Best Planting Material

• Rule 1
  – *Never propagate your own material.* (Very few growers have the time, expertise, or equipment to successfully propagate their own vines)

• Rule 2
  – Always buy vines from a reputable nursery that belongs to the Vine Industry Nursery Association and has VINA or AVIA accreditation
Getting the Best Planting Material

• Rule 3
  – Plan and order 12-18 months ahead. It takes a full year for a nursery to produce a bare rooted vine ready for planting and 6 months for a green potted vine

• Rule 4
  – NEVER, EVER BUY SECONDS!!!!!
  – Second quality vines are seconds for a reason. It is better to delay planting for a season.
Working With Nurseries

• Always choose an accredited nursery with a good reputation
• If possible visit the nursery. You will be able to establish a working relationship with the proprietor/manager and see for yourself that the nursery is clean and well run.
• Discuss your requirements with the manager and order vines 12-18 months in advance.
Working With Nurseries

- Seek advice on clones and rootstocks from a variety of sources including the nursery manager, scientists, industry peers, consultants and extension agents.

- Once your order has been placed maintain communication, but don’t pester the nursery. If the nursery has any problems or shortages you are more likely to get the vines you ordered, or have time to find an alternative supplier.
A clean, well run nursery
HWT – the Facts

• Hot water treatment (HWT) is used to control pests and diseases in DORMANT grapevine cuttings and young rooted vines for which there is no other effective control.

• HWT prevents the accidental transmission of trunk diseases in planting material and greatly reduces the chances of vine failure.
HWT – the Facts

• HWT involves dipping DORMANT cuttings and/or rooted vines material in hot water at a specified temperature for a specified period of time.

• HWT should not be confused with thermotherapy that involves growing cuttings at high temperatures and propagating from meristems (shoot tips) to rid them of viruses.
HWT Regimes

• There are 2 HWT treatments:
  
  ❖ 54°C for 5 min. For the control of **external** pests and pathogens (nematodes, phylloxera etc.).

  ❖ 50°C for 30 min. For the control of both **external and internal** pests and pathogens (nematodes, phylloxera, crown gall, Petri disease and other trunk disease fungi)

**NB:** HWT does not control viruses
Effects of HWT

- Some varieties such as are more sensitive to HWT than others. Pinot Noir is quite sensitive and Cabernet Sauvignon is the least sensitive.

- Cuttings and vines grown in warm climates are less sensitive than those grown in cool climates.

- Healthy vines and cuttings of moderate vigour are less sensitive than rank, stunted or diseased material.
Effects of HWT

• HWT causes a very steep rise in the respiration rate and thus the oxygen demand.

• HWT floods the tissue with water with very low levels of oxygen (air 18% oxygen, water <6% oxygen)

• An oxygen crisis occurs in HWT tissue and fermentation sets in until respiration returns to normal and the tissue recovers. Recovery occurs 24 hours after treatment.
Vine Quality and HWT

• HWT is not a panacea. It is one part of quality vine propagation.
• There are many other factors that contribute to vine quality including:
  – Mother vine management
  – Nursery sanitation
  – Abiotic stress
Post HWT Management

• Proper post HWT management is critical
  – Allow HWT vines to recover for 24 hours before placing in storage.
  – Store vines in perforated bags (at least 4-6 small holes), **never** in sealed bags, but do not allow vines to dry out
  – HWT vines should not be stored for prolonged periods (>3 months).
Post HWT Management

- Cuttings and vines should not be moved in and out of cold storage.

- Cuttings and vines should not be stored with added water in the bags. This encourages the growth of undesirable microorganisms.

- Never store vines in cool rooms with apples, pears or other sources of ethylene.

- Cuttings and vines should not be stored in CA atmospheres.
Pre Planting Management of Vines

- Do not take delivery of vines unless you are ready to plant them.
- If suitable cold storage is not available heel vines in instead. Dig a trench and place the bundles of vines upright with the roots in the trench and cover with loose soil or sand and keep watered.
- Do not soak vines in water. Oxygen levels are low and pathogens can spread.
Pre Planting Management of Vines

- Do not allow cool room temperatures to fluctuate. 1-2°C is best. Botrytis grows at 4°C.

- Do not move vines in and out of cold storage.

- Never put vines back into cold storage after trimming.

- Never allow packaged vines to stand around out of cold storage.
Planting and Post Planting Care

• Remove vines from storage and trim shortly before planting.

• Do not allow the roots to dry out. Cover with clean, damp hessian or spray with water. Never soak vines.

• Water vines in to avoid air pockets around the roots.

• Water little and often gradually increasing the quantity of water and increasing the time between watering as the roots extend into the soil.
Action Plan

• Every time you enact part of the plan check this presentation for guidelines to ensure that your vines are the best and will enable you to achieve your goals.
Action Plan

• 18 months – 2 years in advance
  – Decide on varieties, clones and rootstocks

• 12-18 months in advance
  – Seek out a reputable nursery and place your order.
  – Maintain communication with the nursery
Action Plan

• When you receive the vines open the boxes and check to ensure that the vines are the correct variety, clone, rootstock and quantity as listed on the invoice.
• Check the vines to ensure that they are properly labelled.
• Check the vines to ensure that they are in good condition.
Action Plan

• Care for the vines appropriately before planting.
• Plant and water in the vines according to best practice.
• Keep a record/map of which batches are planted in which blocks and rows.
• Monitor the vines weekly to ensure that they receive adequate water and they are healthy and vigorous and keep a diary note of development.
Action Plan

- **Keep all records**, particularly invoices and receipts. Without these documents it is difficult to seek redress if there are problems.
- Good records that begin with planting are an essential management tool for maintaining and improving vine health.
Action Plan

• Contact the nursery immediately if there are any problems.

• Do not destroy the vines (it is impossible to determine the cause of problems if vines are destroyed)
Further Information

• The following references may be of assistance;

Further Information

• Retallack, M. and P. McMichael. *Grapevine Propagation 1: Purchasing planting material? Key questions to ask the nursery*, Scholefield Robinson Horticultural Services, PO Box650, Fullarton SA, 5063

Welcome to the wine industry from the National Wine and Grape Industry Centre

Your planting records are the birth certificate for a new Australian vineyard asset

Happy Planting 😊