

Grapevine trunk diseases in the vineyard

Part Ia

Starting clean

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Building a healthy vineyard

- ▶ Of all the components of a vineyard, it is the vines that have the greatest impact on the health and thus the productivity, longevity and **profitability** of the vineyard.
- ▶ Quality, disease free vines make great wine.
- ▶ Poor and diseased vines produce smaller crops, make poor wine, are a waste of money and set up a vineyard for failure.
- ▶ **Poor vines make you poor!**





Quality vines

- ▶ Quality vines are the foundation of profitable vineyards.
 - ▶ They:
 - Are healthy and free of propagation transmitted pests and diseases including trunk diseases
 - Establish quickly
 - Are long lived (>15 years)
 - Are resilient in the face of environmental stress
 - Require fewer inputs in the vineyard and are economical to manage
 - Produce consistent crops of quality grapes
 - Require fewer inputs in the winery
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Poor vines

- ▶ Poor vines are a perpetual problem and cost you money through:
 - Poor strike rate and slow establishment (cost of replacements and delays in reaching full production)
 - Uneven growth resulting in uneven vineyards (extra passes with vine training and uneven application of sprays)
 - Short life span (<15 years)
 - Lower yields
 - Poor quality fruit
 - Sensitivity to environmental stress
 - Vulnerability to pests and diseases



Characteristics of quality vines

- ▶ **There are three components of vine quality; intrinsic characteristics, external appearance and internal appearance.**
- ▶ **Intrinsic characteristics**
 - ✓ Vines are accompanied by correct documentation
 - ✓ Are appropriately labelled with the name of the nursery, batch number, variety, clone and rootstock
 - ✓ Both rootstock and scion are of verifiable identity
 - ✓ Vines are traceable to source rootstock and scion mother vines blocks



Characteristics of quality vines

► Intrinsic characteristics

- ✓ Originate from well managed mother blocks of known virus status
- ✓ Free of serious viruses (Red Blotch, Fanleaf, Leafroll etc.)
- ✓ Free of latent bacterial or fungal diseases (Bot canker, Petri disease, Pierce's disease)
- ✓ Not stressed by environmental conditions including drought or frost
- ✓ Not stressed by poor handling practices



Characteristics of quality vines



► External characteristics


- ✓ Dormant vines are packaged without free water in clear bags with several small holes
- ✓ There is no surface slime or mould on the vines
- ✓ Vines are a good bright tan colour
- ✓ Vines are straight, or only slightly curved
- ✓ Vines are evenly sized with stem diameters between 10mm and 15mm



Characteristics of quality vines



External characteristics

- ✓ Undamaged by machinery or vermin
 - ✓ Graft union fully healed
 - ✓ At least two healthy buds on the scion
 - ✓ At least three strong, well spaced roots
 - ✓ Free of active external pests and diseases
 - ✓ Callus does not bulge out from the graft union by more than 3mm
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A good quality vine (external appearance)





Characteristics of quality vines

▶ **Visible internal characteristics (after dissection)**

- ✓ Minimal internal dark staining in the wood that is highly localised at the graft union, base of vine and disbudding sites
- ✓ Woody tissues either cream or a bright lively green, not grey-green and no dead patches or brown streaks.
- ✓ Disbudding wounds do not penetrate to the pith
- ✓ Pith a tan or brown colour
- ✓ Root tissue is a uniform cream colour without dark staining or dead patches

A good quality vine (internal appearance)





Features of poor quality vines

► Intrinsic features – origin of cuttings

- ❑ Cutting source unknown and not able to be traced
- ❑ Cuttings sourced from poorly managed mother vines affected by:
 - Inappropriate nutrition and irrigation
 - Incorrectly identified mother vines
 - Virus infections
 - Fungal and/or bacterial diseases (crown gall, trunk diseases, botrytis, mildews)
 - Poor weed control and/or damage from herbicides and spray drift
 - Pests and vermin




Features of poor quality vines

❑ Intrinsic features

- Vines are not accompanied by appropriate documentation
- Vines not labelled with the name of the nursery, batch number, variety, clone and rootstock
- Insufficient or erratic irrigation in the nursery
- Vines exposed to extreme heat or freezing conditions in the nursery or in transit




Features of poor quality vines

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- **Intrinsic features**
 - Vines have been exposed to agrochemicals or spray drift including herbicides, pesticides, fuels and other chemicals in the nursery, storage or transit
 - Vines deprived of oxygen caused by storing in sealed bags, (black plastic bags are the worst) and/or soaking in water
 - Dehydration caused by leaving uncovered cuttings and/or vines lying around either under cover or outdoors



Features of poor quality vines

► External features

- ✓ Dormant vines are packaged with water in bags, without ventilation and with dirt and debris.
 - ✓ There is surface slime or mould on the vines with a mouldy odour, not a clean earthy odour.
 - ✓ Vines are blackened, soggy or grey.
 - ✓ Vines are bent and crooked.
 - ✓ Vines are ungraded and of uneven size with stem diameters less than 10mm or greater than 15mm.
 - ✓ Green potted vines have symptoms of powdery and downy mildews, yellow or sunburnt leaves.
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Features of poor quality vines



► External features

- ✓ Vine have been damaged by vermin or machinery
- ✓ The graft union is not fully healed
- ✓ Callus at the graft union is excessively large bulging out by >3mm and granular in appearance
- ✓ The scion buds are absent or damaged
- ✓ The roots are sparse, weak and unevenly spaced around the base
- ✓ There are visible signs of nematodes, phylloxera and fungal diseases



Features of poor quality vines


▶ **Visible internal characteristics (after dissection)**

- ✓ Woody tissue in the rootstock or scion is dead or discoloured with dark staining extending away from the graft union, base of vine and disbudding sites
- ✓ Disbudding wounds penetrate to the pith
- ✓ The pith is a dark brown/black colour



Features of poor quality vines

- ▶ **Visible internal characteristics (after dissection)**

- ✓ Woody tissues are grey-green not bright green or cream, have brown streaks.
 - ✓ Dark staining or dead patches in the root tissue
 - ✓ Tissue at the graft union is blackened and glistening with dark staining extending down into the rootstock and/or upwards into the scion
 - ✓ The graft union is not fully healed or callus is not growing from either the rootstock or scion.
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Things you don't want to see.....



Things you don't want to see.....



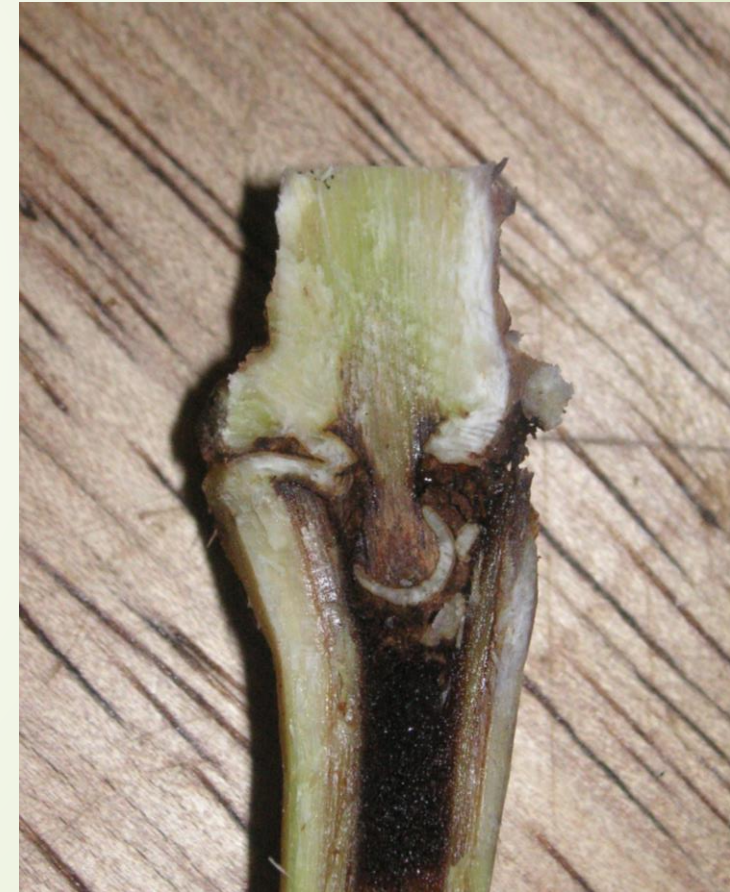
Things you don't want to see.....



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Things you don't want to see.....



Things you don't want to see.....





Ordering, handling and planting vines



Make sure you plan to get the best vines



Ordering you vines

- **Always** use a reputable nursery, but it is not a guarantee of quality
- **Be specific** about the scion variety and clone required
- **Be specific** about the rootstock required
- **Be specific** about the quality parameters you expect the material to meet and get the agreement of the nursery (in writing!) before you confirm the order.

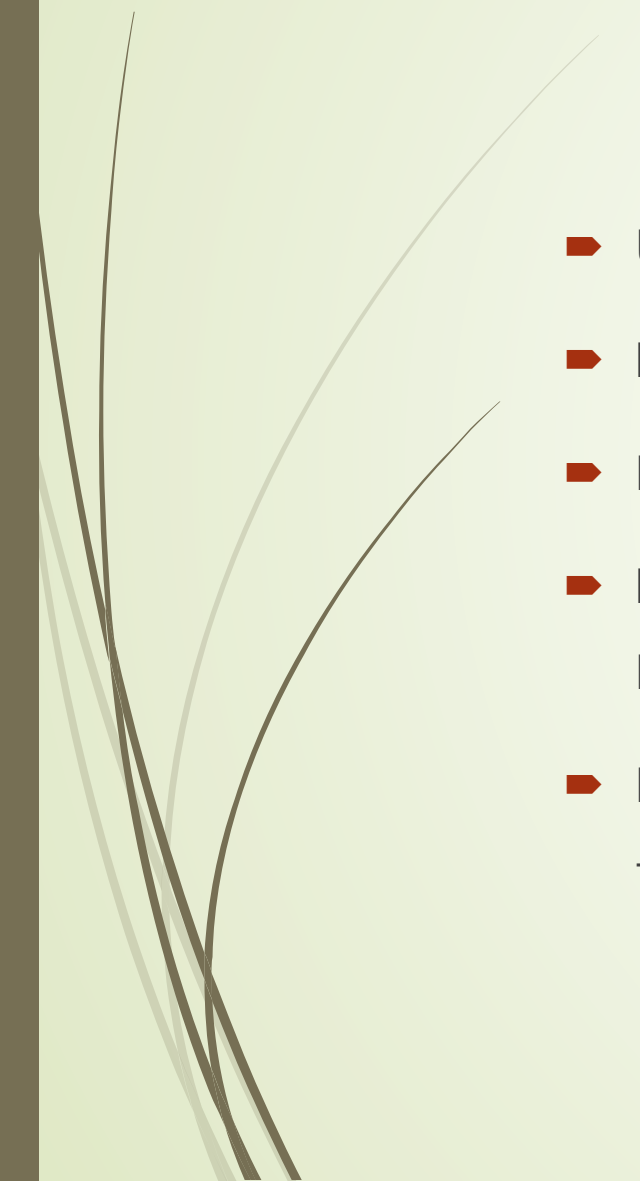


Ordering your vines

- **Never buy second grade vines.** They will cause you problems **forever** and cost you a lot of money.
- Delay planting if first grade vines are not available.
- **Maintain regular contact** with the nursery particularly when arranging delivery.
- **Prepare your site.** Ensure your soil is prepared and irrigation is installed and working.



Taking delivery

- ▶ Unpack and inspect the vines as soon as they are delivered
 - ▶ If the vines are unsatisfactory, contact the nursery immediately.
 - ▶ Keep the vines in a cool place and plant within 48 hours
 - ▶ If planting is delayed, heel vines in in a place where there is semi-shade.
Keep moist, but not wet
 - ▶ Do not store vines in a cool room particularly if other produce is already in the cold chamber
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Summary



- ▶ Great vines make great wine.
- ▶ Poor vines make you poor.
- ▶ Do not plant sub-standard vines they will be a headache forever.
- ▶ Assess each batch of vines for quality BEFORE they are planted
- ▶ Keep good records
- ▶ If the vines are defective, contact the nursery immediately. Do not destroy the vines – they are evidence!

Thank you for your attention

Any questions?

