

# UKVA Bulletin

## Grapevine Trunk Diseases

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Following the recent Wineskills workshops on vine trunk diseases in the UK, presented by Richard Smart and Chris Cooper, Duncan McNeill prepared the outline of this special bulletin. Richard Smart, Chris Cooper, Jim Newsome and Duncan McNeill have all contributed to, and expanded on, the original draft to provide the information set out below. We are grateful for their time and expertise.

The aim of this bulletin is to summarise the most important areas covered at the Wineskills workshops on trunk diseases, and then to provide growers with guidelines to attempt to control spread. These suggestions have come from various sources, primarily the literature of, and communication with, overseas experts. We do not claim to be experts on trunk diseases, but we are raising awareness of the problems; previously no guidelines were available. Growers follow these suggestions at their own risk.

The UK workshops concentrated on three diseases:

DISEASE NAME	FUNGAL PATHOGEN	OBSERVATIONS
Botryosphaeria canker	<i>Botryosphaeria</i>	<b>Infects via pruning wounds.</b> Causes trunk staining. Spreads quickly in UK from vine to vine, and down wind. Confirmed in UK.
Black foot	<i>Cylindrocarpon</i>	Infects the base of the rootstock. Occurs in poorly drained nursery soils. <b>Common cause of young vine failure or poor growth. Confirmed in UK.</b>
Petri disease, previously called Black Goo	<i>Phaeoacremonium and others</i>	Black tar like exudates in pinpoint spots when trunk is cut. <b>Common cause of young vine failure. Not yet seen nor diagnosed in UK.</b>

### The UK situation, in summary

Richard Smart has by now visited around 30 UK vineyards. He has seen symptoms of *Botryosphaeria* in all but one. In most vineyards the proportion of affected vines is small, less than 5%, but in a few the disease had spread rapidly with over 50% of vines affected. Young vines can die when the infection moves down the trunk to the graft union. Infection is from the pruning wound typically at the retained spur with Guyot pruning. FERA have been testing samples, often with a low rate of confirmation even though the vines in situ are showing symptoms of infection. The causes for this are being investigated. The problem appears worse in young vineyards, less than 10 years old. Older vines appear to be more tolerant. *Botryosphaeria* is the biggest problem in the UK. There is no established cure. Prudent managers will aim to reduce spread, and we offer guidelines below.

*Cylindrocarpon* is common in young vineyards; vines may die or fail to thrive. There is evidence that some imported nursery plants may be infected. This is more common in young than old plants.

Other stresses on the plant exacerbate the diseases. Poor drainage, poor nutrition, soil compaction, drought, frost, weeds, other diseases all make vines prone to trunk disease.

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### Possible sources of infection

- Nursery plants. Possibly *Botryosphaeria* in scion wood and Black Foot in rootstock. Both may occur in the one plant.
- Possibly from vineyard soil for *Cylindrocarpon*, although this is not confirmed here.
- Surrounding vegetation. This is very likely for *Botryosphaeria* canker in the UK. It has a host range of a large range of shrubs, forest and fruit trees. Richard Smart has seen several vineyards where hedgerows are a likely source of infection.
- Infected plants in the vineyard. For *Botryosphaeria* the spores can travel 3m, and infected vines can be covered by fruiting bodies. Spread can be further downwind.
- Prunings retained in the vineyard.

### SYMPTOMS:

#### **Botryosphaeria Canker**

Poor / zero bud burst. Leaf chlorosis. Cane bleaching. Graft union necrosis. Slow growth. Summertime-autumn apoplexy, loss of leaves. Leaves can turn red in autumn for red varieties although red leaves are not always an infection indicator.

Light brown trunk staining, traceable back to a pruning wound. These are typically in the head, and extend downwards in the trunk. In established infection, there is a wedge shaped canker. *Botryosphaeria* can move through the graft union, and it causes darker staining in the rootstock.



Typical trunk staining with *Botryosphaeria*, and also wedge shape canker



Appearance of *Botryosphaeria* with darker staining in rootstock, having passed the graft union. Scion at top, rootstock below.



### Black Foot

Stunted growth. Reduced bud burst. Aerial roots growing from above the rootstock, and roots growing from the top of the rootstock. Poor root growth. Circular shaped black stain in base of trunk.



Longitudinal section showing *Cyindrocarpon* invasion of the base of the rootstock cutting, showing staining.



Typical *Cyindrocarpon* staining near base of rootstock.



### **Petri Disease (Black Goo)**

Stunted growth, Black tar like exudates coming from xylem vessels approx 30 seconds after cutting through trunk. This is the most distinguishing characteristic of this disease.



### **Observations made in the UK for *Botryosphaeria***

- *Botryosphaeria* canker could spread quickly in the UK due to the relatively mild wet winters. Spores spread in the winter when pruning as the climatic conditions tend to be milder and damper than in many other wine producing countries.
- Infected symptomatic vines are often in clumps, down and across rows, especially downwind.
- There are likely many fruiting bodies (pycnidia) on the base of the canes, little black spots. These are a source of infection during pruning.
- Susceptible varieties appear to be: Rondo, Pinot Noir, Pinot Gris. Less common on Seyval Blanc.
- Variation in severity and level of infection across rootstocks. This is currently being quantified.
- Sudden vine death (apoplexy) mid-late season as result of *Botryosphaeria*.
- Pale foliage like nitrogen deficiency. Isolated vines showing yellow foliage and or magnesium deficiency may be early signs of infection.
- Vines downwind of the source are most at risk.

### **HOW TRUNK DISEASES SPREAD**

**Black Foot and Petri Disease** appears to originate from nursery plants. It is not clear how widespread the infection is. There is no evidence of spread with either of these diseases once vines are planted, but replanting in the same site may lead to re-infection for *Cylindrocarpon*.

***Botryosphaeria*** spreads by the release of airborne spores. Favourable conditions are damp, humid weather. Spore release follows rain or dew, and high humidity, and can occur as low as 5° C.

Other possible sources for *Botryosphaeria* are:

- Plants (ex nursery). Staining with *Botryosphaeria* has been seen in the pruning stub made when vines were pruned following removal from the field nursery

Other vines in the vineyard – principally nearby and upwind:

- Old prunings, situated upwind
- Surrounding shrubs and trees, and hedgerows
- Generally not present in the soil



## METHODS OF AVOIDANCE AND CONTROL

### Young plants

All three trunk diseases have been found in nursery plants. They can originate from infected rootstock or scion mother vine plantings, and during the nursery process, including grafting, etc, and growing on in the field.

Best control is by ensuring you purchase disease free plants from your supplier or nursery. An open dialogue with your supplier or nursery is recommended. We doubt they can offer guarantees, such is the nature of living plants.

Questions you may like to ask are:

- What procedures are in place for providing disease free plants? Checking of source block cuttings? Any and which fungicides are used in nursery? Is hot water treatment used? Is any testing of fields for specific fungi carried out?
- Will dead/sick/symptomatic vines be replaced? Up to how long after planting? (Young vines with *Botryosphaeria* may not show symptoms in the first year.)
- What is the responsibility of the agent / supplier? What if symptoms are seen in delivered young plants?

### Botryosphaeria

It may be cured if identified early. Cut well below (min 5cm) the stain in the trunk and train up a sucker shoot from the base of the vine. This will create the new trunk. However, realise that you may transfer the fungus from stained to unstained wood if you do not sterilise your secateurs.

Other control measures include:

- Reduce stress on the vine. Candidates include drought, water logging/poor drainage, maybe nutrient stress, weeds and other diseases.
- Remove infected vines. We suggest that you inspect vines before leaf fall and check trunks of any vines with poor growth and red or unusual foliage. They are a major infection source. Remove as much as you can. Take them down wind and burn.
- When to remove? When the vine is not productive or clearly failing to grow well – and if other factors such as poor soil conditions or nutrition can be ruled out. We have never seen vines improve with trunk disease. The sooner you remove the better. Preferably remove before winter.
- Once removed, wait until the following season to replant.
- Treat pruning wounds to stop spread, see later. Spurs are a major infection point, as the fungus has less far to travel to reach the vine trunk, and it seems to travel more quickly in older trunk wood than last year's cane. Infection spreads downwards.
- When making large cuts, do not cut flush to the trunk – leave a stub of 1 inch.
- Do not prune suspect vines at the same time as non-symptomatic vines. Either remove, tag or post prune the suspect vines. Treat the vines adjacent to affected ones as likely infected.
- Ideally remove prunings downwind and burn them.



## WINTER PRUNING SUGGESTIONS

- Avoid pruning during rain or immediately after rain.
- Delay pruning where possible. Pruning when sap is flowing may hinder the entry of spores into the pruning cut.
- Disinfect secateurs at the end of each day, using Milton solution or propanol, and soak the blades for 15 minutes. (Propanol may be obtained as Propeller, a 50-70% solution, from Evans Chemical Supplies, Redruth, Cornwall tel 01209 213643 fax 01209 313 800.)
- Disinfecting between cuts may not be effective. Spores present on the bark may be smeared across the cut by the blade, and infect the vine in this way. Lab tests currently being carried out by FERA will provide more information on this point.

The approach below may be applied to the whole vineyard, but is suggested at least for affected vines and their immediate neighbours. For vineyards where you do not think disease is present, you may drop the propanol treatment, but the Nativo and acrylic paint is likely still worthwhile.

Spray the cane base where you will cut to make a spur with 50-70% propanol. Cut. Then spray the cut with the same material. As soon as possible spray the cut with Nativo 75 WG (36 g/10 Lt), using a knapsack.

Then as soon as practical, after Nativo has dried, apply acrylic paint to the cut surface.

### Important Notice:

It is alleged that some growers are mixing 200g of Nativo 75 WG into 5lt of acrylic to get a product similar to the no longer marketed but approved vine pruning paint Bezel. **Although this would probably be effective, CRD would regard this as a change in formulation and therefore a breach of the approval conditions of Nativo 75 WG. This would probably lead to a withdrawal of the Extension of Authorisation of Use on Vines, so this behaviour cannot be condoned.**

### Growers wishing to use Vinevax as a non-fungicidal treatment should do the following:

Apply as a spray at a rate of 10 g / litre. Pre-mix by adding 100g to 200ml of water. Stir to a uniform consistency, and then make up to a 10-litre solution. Use the solution on the day it is mixed. Apply 5 – 15 hours after pruning.

Instructions for Vinevax preparation, such as the use of tepid water to activate the fungus, are to be found on the product label.



## FOLLOWING SEASON MANAGEMENT

- Start an early season spray programme of broad spectrum, protectant sprays. This includes sulphur, mancozeb, copper and stroby (kresoxim methyl). Start spraying once the first exposed leaf is the size of a 50p piece.
- Map the distribution of infected vines in your vineyard. Do this on a yearly basis, to track any spread.

### DO NOT

Ignore uneven growth

Ignore sick vines

Ignore dead vines

### DO

Have your agent visit re any problems

Analyse problem vines for disease

A Wineskills Masterclass dedicated to the topic of grapevine trunk diseases is scheduled for December. This will provide further information on the origins and causes of trunk diseases, and also detail control measures that have been successful in other wine producing countries. Wineskills will advertise this Masterclass once a date has been confirmed.

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