BOTRYOSPHAERIA DIEBACK IN GRAPEVINE NURSERIES

Figure 1. Stunted vine with delayed budburst and chlorotic foliage..

Figure 2. Vine death in spring.

KEY NOTES

- Nursery mothervines and the canes they produce for propagation can be infected with *Botryosphaeria* pathogens, often without causing any obvious symptoms.
- Spores produced on infected mothervines are splash-dispersed to infect wounds on the growing shoots and also colonise their bark until a cut is made to allow entry.
- To reduce spore numbers, eradicate infected wood from the mothervine block.
- Apply fungicide sprays after trimming and harvesting to protect these wounds.

SYMPTOMS

Botryosphaeria species can cause die-back and decline in nursery mothervines, which produce the canes used for grafting and propagation into new plants. These symptoms are similar to those seen in vineyards. However, the infected canes usually appear symptomless when cut for propagation and the resulting grafted plants also appear healthy when harvested as dormant plants after eight to nine months' growth in the nursery field. A recent New Zealand study found that the canes and grafted plants from most nurseries had some *Botryosphaeria* infection (23% infection overall).

Evidence from diagnostic laboratories has shown that declining young vines (one to two years after planting) were frequently infected by *Botryosphaeria* species. These young vines often had delayed budburst or were stunted and chlorotic (Figure 1), sometimes with necrotic leaf and flower buds. In some cases the vines that died within two to four years after planting were also infected with *Botryosphaeria* species (Figure 2).

DISEASE CYCLE

In mothervine blocks, the disease cycle of *Botryosphaeria* species is the same as it is in vineyards. The pathogens persist in infected wood from grapevines and many other woody hosts (on and off the vine), from which they produce spores (conidia) during high relative humidity (RH) or rain. The conidia are dispersed by splash and run-off of rain water and contaminate the surfaces of the shoots and may infect any trimming wounds. Recent research has also shown that once the spores reach the bark surface they stick very quickly. They then colonise the bark, and become inactive until wounds are made nearby which allow entry into the wood.

Recent New Zealand studies investigated whether the different stages of propagation had a role in spread of the disease. There was little or no contamination by the *Botryosphaeria* species in most stages of the process. Only grafting tools were consistently contaminated by these pathogens, probably because they accumulated minute wood fragments from infected cuttings. The growing phase in mothervine blocks represents the most important source of infection, which can result in infected plants.

CONTROL

Reducing conidial numbers: Since the conidia are mostly produced from infected wood of mothervines and other hosts, these sources should be thoroughly inspected for evidence of infection and removed if found to be infected. Remove all wood debris from the mothervine block.

Wound protection: If nursery propagators trim the lateral shoots from the main shoots during growth, they should use fungicide sprays to protect the wounds. Harvesting of canes should be done during dry conditions and the wounds protected with generic paints or pruning pastes.

Elimination of superficial contaminants/ infections on canes: Since superficial conidia appear to germinate and infect the canes very soon after they are harvested from the dormant shoots, further studies are exploring ways of killing or removing them.

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