Distribution and associated symptoms of grapevine trunk pathogens in South Africa

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In recent studies, several grapevine trunk pathogen complexes have been identified from grapevines in South Africa. These pathogens include *Eutypa lata*, *Phaeomoniella chlamydospora*, *Phaeoacremonium* sp., *Botryosphaeria* sp. and *Phomopsis* sp. Trunk diseases lead to reduced yield, and grape quality as well as a decline and premature dieback of grapevines. Infection occurs as early as the propagation processes, or during the subsequent vineyard development. As these pathogens infect mainly through wounds, most research has focussed on the protection of pruning wounds. However, climatic differences between different grape growing regions would likely affect the demographics of regional pathogen populations. In order to develop management strategies for specific regions, it was therefore necessary to determine the distribution of grapevine trunk disease pathogens in different grape growing regions of South Africa.

During October 2003 – April 2004, a survey of visually healthy grapevines was conducted in 10+ year-old Cabernet Sauvignon vineyards in Stellenbosch, Malmesbury, Vredendal, and Robertson (3 vineyards from each region). In the fifth region, Upington, Ruby Cabernet vineyards were sampled. Samples consisting of the two distel cordon pieces (including the last spurs on each side) were collected from twenty grapevines in each vineyard. The occurrence of trunk disease pathogens was determined by doing isolations onto potato dextrose agar from all the different wood decay symptom types that were observed in cross sections of the samples. Plates were incubated for 2 – 4 weeks before the isolated fungi were identified based on morphological or molecular characteristics.

Internal wood symptoms ranged from black and brown vascular streaking, brown V-shaped lesions, brown watery lesions, brown internal necrosis and Esca associated symptoms. The isolations clearly showed that specific symptom types could not be attributed to one single pathogen but that overlap of symptoms occurred between pathogens. The dominating pathogens across the five surveyed areas were *Pa. chlamydospora* and *Botryosphaeria* sp., which were isolated two to four times more frequently than *Phaeoacremonium* sp. and *Phomopsis* sp. In the cooler regions of Stellenbosch and Malmesbury, the dominating pathogens were *Pa. chlamydospora* and *Phaeoacremonium* sp., while *Botryosphaeria* sp. occurred more frequently in the hotter regions of Robertson, Vredendal and Upington. Relatively low numbers of *Eutypa lata* were recorded with the Stellenbosch area having the highest occurrence of the fungus. These results therefore indicate that the demographics of trunk disease pathogen populations differ between climatically different areas. Pruning wound protection strategies should consequently be adjusted accordingly.