

Pro-active management of grapevine trunk diseases by means of sanitation in nurseries

P.H. Fourie¹ and F Halleen²

¹ Department of Plant Pathology, University of Stellenbosch, Private Bag X1, Matieland 7602, South Africa

² Disease Management, ARC Infruitec-Nietvoorbij, Private Bag X5026, Stellenbosch 7599, South Africa

E-mail address: phfourie@sun.ac.za

Several trunk diseases cause decline and premature dieback of grapevines. In vineyards, these pathogens gain entry into plants through unprotected wounds. Wounds are also frequently infected during the propagation stages. The pathogens survive in infected plants in a latent form and cause disease in older grapevines or in plants that are subjected to stress. No curative management strategies are known and disease prevention strategies focus on the protection of wounds in nurseries and vineyards. The aim of this study was to determine the effect of different chemical and biological sanitising treatments of propagation material on infection of trunk disease pathogens.

Rootstocks (101-14 Mgt) and grafts (Shiraz) were drench-treated in captan, benomyl, bronocide, Sporekill, Bio-sterilizer, chinisol and Trichoflow prior to cold storage (1 h drench), prior to grafting (10 min drench) and prior to planting (5 s dip). Vines were bench-grafted by hand or Omega machine and cold or hot callused, respectively. For the hand-grafted treatment, half the number of plants was grafted with sterilised hands on sterilised tables, while the other half was grafted under standard conditions (dirty hands and tables). The treated, grafted rootstocks were planted in a field nursery in Wellington and grown for 7-8 months before it was uprooted. Take percentages, root and shoot mass, as well as the incidence of *Botryosphaeria*, *Cylindrocarpon*, *Phomopsis*, *Phaeomoniella* + *Phaeoacremonium* spp., total pathogen and *Trichoderma* in graft unions and basal ends of rootstocks of uprooted vines were determined.

Take percentages for most treatments did not differ significantly. None of the treatments impacted negatively on vine growth. Benomyl, Sporekill, captan and bronocide were consistently most effective in reducing the incidence of pathogens in the graft union and in the basal end of the rootstock. Bronocide did, however, cause a reduction in take percentage. Trichoflow, chinisol and Bio-sterilizer were not as effective and marginal to no reductions were observed. Significantly more Petri disease causing pathogens were isolated from the graft unions of cold callus vines, compared to the hot callus vines. This might be attributed to the bigger grafting wounds (hand grafted vs. Omega bench grafted), and might also indicate that these pathogens infect graft union wounds during the propagation process.

By isolating important trunk disease causing pathogens from the graft unions and basal ends of rootstocks of certified nursery vines, this study has clearly showed that sanitation practices during the propagation process is of utmost importance. Benomyl, Sporekill and captan provided the best protection against trunk disease pathogens. However, integrated treatment strategies with environmentally safe products should be considered in order to comply with environmental laws.