vineyard portions were monitored from three to four years, and leaf stripe disease and apoplexy were monitored at the end of the season. A significant reduction in foliar symptoms expression was obtained usually at the second-third year of application. These results strongly support the idea that, independently from the internal trunk and cordon colonization, the new infections, close to the new bud, have a strong link with foliar symptoms development.

Nursery Propagation

Distribution of Botryosphaeriaceae species and genotypes within a rootstock mother vine indicates multiple inoculum sources. R. BILLONES-BAAIJENS[1,2,*], H.J. RIDGWAY[1], E.E. JONES[1] and M.V. JASPERS[1]. [1]*Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 85084, Lincoln University, Lincoln, New Zealand, 7647.* [2]*National Wine and Grape Industry Centre (NWGIC), Charles Sturt University, Mckeown Drive, Wagga Wagga, NSW 2678 Australia. *E-mail: rbaaijens@csu.edu.au*

Infected rootstock and scion cuttings by Botryosphaeriaceae fungi have been reported as major sources of infection for young grapevines. To investigate the potential infection pathways of Botryosphaeriaceae species within a rootstock mother vine, a universally-primed polymerase chain reaction (UP-PCR) was conducted. This method differentiated the genotypes within two *Neofusicoccum* species, namely *N. luteum* and *N. parvum*. The first study showed that multiple Botryosphaeriaceae species and genotypes can infect a single mother vine. It further showed that the trunk and shoot isolates of the same species from the same vine were of the same or different genotypes, suggesting multiple infections from different inoculum sources. The second study that investigated the spatial distribution of Botryosphaeriaceae fungi within an entire dormant cane also showed that multiple species and genotypes were distributed along the cane, but most isolates were sited within the bark and less frequently in the wood, suggesting they were latent in surface tissues. Some adjacent wood and bark infections were caused by the same genotypes also suggesting that wood infection may have originated from the bark. The third study further showed that the *Neofusicoccum* isolates recovered by washing the cuttings were of the same or different genotypes from those isolated from adjacent internal tissues, again suggesting multiple sources of external inoculum. These fungi appear to cause latent infections in the bark of dormant cuttings which are used in plant propagation, thus providing an additional infection pathway for a disease that is known to show obvious symptoms only in older vineyards.

Management of *Botryosphaeria* species infection in grapevine propagation materials. R. BILLONES-BAAIJENS[1,2,*], A. ALLARD[1,3], Y. HONG[1,4], E.E. JONES[1], H.J. RIDGWAY[1] and M.V. JASPERS[1]. [1]*Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 85084, Lincoln, New Zealand.* [2]*National Wine and Grape Industry Centre (NWGIC), Charles Sturt University, Mckeown Drive, Wagga Wagga, Australia.* [3]*Institut National de la Recherche Agronomique UMR 1334, Montpellier, France.* [4]*Department of Conservation Biology, Southwest Forestry University, Kunming City, China. *E-mail: rbaaijens@csu.edu.au*

In New Zealand grapevine propagation nurseries, *Botryosphaeria* spp. were isolated from 23% of grapevine plant materials. The pathogens were widespread in mother vine blocks and infections were often present in the bark, not wood, of cuttings. Studies into control methods began with attempts to wash the *Botryosphaeria* conidia from cuttings, however they were unsuccessful as conidia adhered rapidly (within 5 min) to canes. Hot water treatment (HWT) of rootstock 5C cuttings, previously infected with *Neofusicoccum parvum* and *N. luteum*, at 50°C for 30 min resulted in internal infection incidences of 50% and 100%, respectively. HWT at 53°C for both 30 and 60 min reduced infection incidence for *N. luteum* and *N. parvum* to 0 and 8.5%, respectively, but killed the buds. In naturally infected cuttings, 50°C for 30 min reduced infection incidence from 35% in controls, to 0–15% over all *Botryosphaeria* spp. Shorter periods of HWT, at 55°C for 5 min, designed to kill bark infections, were ineffective. To determine fungicide efficacy for eliminating bark infection, Sauvignon blanc cuttings superficially infected with *N. luteum* were soaked for 30 min in carbendazim, tebuconazole, thiophanate methyl or flusilazole, with and without an organosilicone adjuvant. Results showed that carbendazim with no adjuvant and tebuconazole with 0.5 mL L^{-1} adjuvant eliminated 100% of bark infections. A further experiment that soaked 2,000 cuttings (Sauvignon blanc and Pinot noir) in a carbendazim solution prior to rooting found that all cuttings were free of *Botryosphaeria* spp. infection, compared to 13% natural incidence.

Survival of Botryosphaeriaceae species after hot water treatment. J. LUQUE[1,*], G. ELENA[1], V. DI BELLA[2] and J. ARMENGOL[3]. [1]*IRTA Cabrils, Ctra. de Cabrils km 2, 08348 Cabrils, Spain.* [2]*Università degli Studi di Palermo, Viale delle Scienze, Edificio 4 Ingr. B, 90128 Palermo, Italy.* [3]*Instituto Agroforestal Mediterráneo, Universidad Politécnica de Valencia (IAM-UPV), Camino de Vera s/n, 46022 Valencia, Spain. *E-mail: jordi.luque@irta.cat*

The use of hot water treatment (HWT) in the grapevine propagation process has been shown to be a potentially effective tool to control Petri and 'Black Foot'