Nursery Propagation

Distribution of Botryosphaeriaceae species and genotypes within a rootstock mother vine indicates multiple inoculum sources. R. BILLONES-BAAIJENS1,2*, A. ALLARD1,3, Y. HONG4,5, E.E. JONES1, H.J. RIDGWAY1 and M.V. JASPERS1. 1Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 85084, Lincoln, New Zealand. 2National Wine and Grape Industry Centre (NWGIC), Charles Sturt University, Mckeown Drive, Wagga Wagga, Australia. 3Institut National de la Recherche Agronomique UMR 1334, Montpellier, France. 4Department of Conservation Biology, Southeast Forestry University, Kunming City, China. *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-BAAIJENS1,2*, A. ALLARD1,3, Y. HONG4,5, E.E. JONES1, H.J. RIDGWAY1 and M.V. JASPERS1. 1Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 85084, Lincoln, New Zealand. 2National Wine and Grape Industry Centre (NWGIC), Charles Sturt University, Mckeown Drive, Wagga Wagga, Australia. *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 SC 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 33% 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. LUQUE1,*, G. ELENA1, V. DI BELLA2 and J. ARMENGOL3. 1IRTA Cabrils, Ctra. de Cabrils km 2, 08348 Cabrils, Spain. 2Università degli Studi di Palermo, Viale delle Scienze, Edificio 4 Ingr. B, 90128 Palermo, Italy. 3Instituto 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’