A three year trial was conducted in a 15-year-old vineyard of cv. Aragonez in Alentejo, Portugal, to evaluate the effectiveness of selected products (azoxystrobin (Quadris®), copper oxychloride (Cuprocol®), difenoconazole (Score®), tebuconazole (Horizon®), and two mixtures of Cuprocol + acibenzolarSmethyl (Bion®) and Score + acibenzolarSmethyl (Bion®)) against Botryosphaeria canker and Phomopsis cane and leaf spot. Each year, three spray applications were carried out: after pruning, at growth stages C/D (leaf tip visible/ first leaf separated from shoot tip) and after pruning + growth stages C/D. A total of 18 treatments were applied on the grapevines in a completely randomized design. Incidence and severity were evaluated. In the last year of the trial, the number of dead plants, yield and vigour of plants were recorded. The adoption of the yearly practice of protecting pruning wounds and plants by a full crown spray at phenological stage C/D has demonstrated the capacity to reduce both diseases incidence and severity. Treated vines showed consistently low levels of incidence and severity when compared with control plants. One application of Bion + Cuprocol after pruning followed by one application of Bion + Score at phenological stage C/D was the most efficient treatment. Also, the lowest number of dead plants, the highest yield per plant and the highest percentage value for plant vigour were achieved with the same combination of products/spray application timing. As conclusion, this combination of treatments appears to be a good strategy to control Botryosphaeria canker and Phomopsis cane and leaf spot.

Influence of mustard biofumigation on growth, conidial germination and propagule recovery of *Ilyonectria macrodidyma*-complex species. J.E. BARBOUR[1], H.J. RIDGWAY[1] and E.E. JONES[1,*]. [1] *Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 85084, Lincoln University, Lincoln, New Zealand, 7647. *E-mail: Eirian.Jones@lincoln.ac.nz*

Black foot caused by *Ilyonectria* spp. is a significant economic problem resulting in the decline and death of vines. Biofumigation using mustard has recently shown potential to reduce this disease. *In vitro* sandwich plate assays and a soil box assay were used to compare the effect of biofumigation using standard brown mustard and a recently released cultivar Caliente 199 to suppress *Ilyonectria macrodidyma, I. novozelandica* and *I. torresensis* isolates associated with black foot disease in New Zealand. Both mustards reduced mycelial growth and conidial germination of all isolates, but overall efficacy of the two mustards varied between experiments and is probably related to plant physiology at harvest. In combination with soil, however, mustard efficacy was reduced. Isolates within a species differed in susceptibility to biofumigation. In addition, the relative effect of biofumigation on mycelial growth versus conidial germination varied for isolates, with *I. macrodidyma* Ack1a the most susceptible isolate with regards to conidial germination but least with regards to mycelial growth. Recovery of mesh bags containing mycelial or conidial inoculum of each species after burial in mustard amended or unamended soil in the box bioassay indicated the rapid conversion of inocula into chlamydospores. Amending soil with either mustard cultivar did not change the overall dynamics of propagule conversion over time, however, it significantly affected the numbers of conidia and chlamydospores recovered from conidial inoculum after different incubation times. Mustard biofumigant crops have potential to be incorporated into an integrated strategy for management of black foot in vineyards and nurseries.

Interaction between arbuscular mycorrhizal fungi and rootstock cultivar on the susceptibility to infection by *Ilyonectria* species. E.E. JONES[1,*], S. HAMMOND[1], C. BLOND[1], D.S. BROWN[1] and H.J. RIDGWAY[1]. [1]*Faculty of Agriculture and Life Sciences, Lincoln University, PO Box 85084, Lincoln University, Lincoln, New Zealand, 7647. *E-mail: Eirian.Jones@lincoln.ac.nz*

Arbuscular mycorrhizal fungi (AMF) have been shown to increase tolerance of grapevine rootstocks to black foot disease caused by *Ilyonectria* spp. The effect of precolonisation of different rootstocks with two AMF species on the susceptibility to *Ilyonectria* spp. was determined. Three rootstocks (3309C, 5C and Schwarzmann) commonly used in New Zealand colonised with either *Acaulospora laevis, Funneliformis mosseae* or untreated were grown in soil and inoculated with a mixture of *Ilyonectria* spp. isolates representing the species diversity recovered from New Zealand grapevines. After 9 months growth, root and shoot dry weight and trunk base infection by *Ilyonectria* spp., and the catabolic function of the rhizosphere microbial community using MicroResp™ was assessed. Both *A. laevis* and *F. mosseae* increased root dry weight, with no effect on shoot dry weight. Grapevine rootstocks varied in susceptibility with 5C being most susceptible. AMF species altered rootstock susceptibility, with *A. laevis* inoculation of 5C decreasing disease severity and *F. mosseae* having no effect on disease severity of this rootstock. However, *Funneliformis mosseae* inoculation of Schwarzmann decreased disease compared with *A. laevis*. In the absence of the pathogen, the catabolic function of the microbial community in the rhizosphere of 3309C and Schwarzmann differed significantly from that of 5C, but this difference was not apparent following *Ilyonectria* spp. inoculation. AMF inoculation had no effect on the carbon utilisation profile of the rhizosphere microbial community. The results suggested a direct effect of AMF inoculation on rootstock susceptibility rather