FIRST REPORT OF A NEW PHAEOACREMONIUM SPECIES ASSOCIATED WITH BLACK STREAKING SYMPTOMS IN GRAPEVINE IN NEW ZEALAND

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INTRODUCTION
Several Phaeoacremonium and Togninia species have been associated with decline symptoms and black streaking of xylem tissue in grapevines (1). P. aleophilium, and Togninia novae-zealandiae have been recorded in New Zealand but not in grapevine hosts (1). Rather, the symptoms of decline in grapevines have only been associated with Phaeomoniella chlamydospora (2) and Cylindrocarpon species (3). A survey of fungal species causing decline in was conducted in several 20+ year-old mother vine blocks. Several rootstock varieties were surveyed. As well as Pa chlamydospora, a new species of Phaeoacremonium was isolated from several SC UCD rootstock mother vines with black streaking in the xylem.

MATERIALS AND METHODS
Materials used Three blocks of rootstock mother vines containing Vitis riparia x V. rupestris cv. 101-14 Mgt, 3309, 3306 and Schwarzmann as well as Vitis riparia x V. berlandieri cv. 5C UCD and SO4 were surveyed for Petri disease and esca symptoms.
Methods Small pieces of unsterilised tissue cut from around darkened xylem were placed in 2% MEA media amended with 0.1% (w/v) yeast, 1% (w/v) Benlate and tetracycline (1 g/L). Isolates were subcultured and identified by sequencing of three genes, ITS, β-tubulin (TUB), and actin (ACT). Phylogenetic trees of the three genes were constructed using Maximum likelihood in PAUP*, and Bayesian methods in Mr Bayes comparing other Phaeoacremonium and Togninia species with isolates ES62 and ES63.

RESULTS
Figure 1 shows a four week-old Phaeoacremonium culture isolated from discoloured xylem tissue of grapevine onto MEA. A total of 5 similar isolates were found during this study.

Figure 1. Four week-old Phaeoacremonium culture (ES62) grown on MEA.

The isolates obtained from rootstock grapevines in New Zealand had similar morphology to other Phaeoacremonium species previously described (1). Figure 2 shows that the isolates from New Zealand are unique from but closely related to several other Phaeoacremonium and Togninia species. The combined TUB and ACT tree (not shown) was more discriminatory among Phaeoacremonium.

DISCUSSION
This study showed that these isolates from grapevine belong to a new species of Phaeoacremonium. These isolates were found in the same wood as the pathogen Phaeomoniella chlamydospora. ITS sequencing alone was insufficient to discriminate among Phaeoacremonium species, a multilocus approach and classical morphology was required to distinguish the novel species. Pathogenicity studies are necessary to determine whether the new Phaeoacremonium species is also a grapevine pathogen.

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REFERENCES