Abstract

Decline disease of grapevine is a complex disease with worldwide distribution. The disease affects young and old vines. Several species of hyphomyecetous genus, *Phaeoacremonium*, and *Phaeomoniella chlamydospora* together with two basidiomycete species *viz.*, *Stereum hirsutum* and *Fomitiporia mediterranea* are major fungal species involved in decline disease. *Phaeomoniella chlamydospora* occurs on young vines; while, *Phaeoacremonium* spp. and the two other basidiomycete species are mainly associated with old vines. In addition to above mentioned species, several other fungal species have been isolated from grapevines with decline disease symptoms, of those, some species have proven to be pathogenic on grapevine. In present study, fungal species associated with decline disease of grapevine were studied in West Azarbaijan province of Iran. During 2009 and 2010 growing seasons, 45 vineyards were subjected to study the decline disease in this Province. A total of 150 fungal isolates were recovered from diseased grapevine samples showing decline symptoms such as stunting growth, dieback, canker and wood decay including brown to black streaking or spots and white rot. Morphological characterization of fungal isolates revealed a wide a range of fungal species associated with decline disease of grapevines in this province. The most common pathogenic fungal species isolated in this study were *Phaeomoniella chlamydospora*, *Phaeoacremonium aleophilum*, *Pm. cf. mortoniae*, *Lasiodiplodia cf. theobromae*, *Neofusicoccum sp*., *Truncatella angustata*., *and Pestalotiopsis sp. Phaeoacremonium* spp. and *Botryosphaeriaceae* spp. were the most important fungi isolated from grapevine dieback in this study followed by *Acremonium strictum*, *Acremonium sp.*, *Truncatella* spp., *T. angustata*, *Pestalotiopsis sp.* and *Cytospora* spp. Pathogenicity of *Phaeoacremonium* and *Acemonium* species were verified by inoculation of cutting root and stems under glasshouse condition and pathogenicity of others were examined on excised mature lignified dormant canes under controlled laboratory conditions. Data from the pathogenicity assay was analyzed using SPSS and revealed that isolates of *Pm. aleophilum* and *Pm. cf. mortoniae* are the most virulent based on appearance of esca symptoms on leafs as the median of symptoms severity in this species were about 80% and length of vascular necrosis on woody stems in these speciese were more than of 170mm; that followed by *Acremonium strictum* and *Acremonium sp. Botryosphaeria* spp. were the most virulent based on length of vascular necrosis in the wood that revealed more than 130mm vascular necrosis on wood and proximately 95% re-isolated from these necrosis. *Truncatella sp*., *T. angustata*, *Pestalotiopsis sp.* isolates followed in virulence to *L. cf. theobromae* and *Fusiccocum sp*. that displayed about 60mm vescular necrosis. *Cytospora chrysosperma* and *Cytospora sp*. were shown to be virulent and capable in colonizing mature wood and cause vascular necrosis with more than of 30mm lenght, wood bleaching and white rots of grapevines. All these fungal species represent newly recorded fungal pathogens of grapevines in West Azerbaijan province.

Key words: Esca, Grapevine Dieback, Trunk Diseases, *Vitis vinifera*

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Identification of fungi causing grapevine decline in west Azerbaijan province

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