Ceratocystis manginecans Causal Agent of a Destructive Mangoes in Pakistan

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Abstract : Mango sudden death is an emerging problem in Pakistan. As its prevalence is observed in almost all mango growing areas and severity varied from 2-5% in Punjab and 5-10% in Sindh. Symptoms on affected trees include bark splitting, discoloration of the vascular tissue, wilting, gummosis and at the end rapid death. Total of n= 45 isolates were isolated from different mango growing areas of Punjab and Sindh. Pathogenicity of these fungal isolates was tested through artificial inoculation method on different hosts (potato tubers, detached mango leaves, detached mango twigs and mango plants) under controlled conditions and all were proved pathogenic with varying degree of aggressiveness in reference to control. The findings of the present study proved that out of these four methods, potato tubers inoculation method was the most ideal as this fix the inoculums on the target site. Increased fungal growth and spore numbers may be due to soft tissues of potato tubers from which Ceratocystis isolates can easily pass. Lesion area on potato tubers was in the range of 7.09-0.14 cm2 followed by detached mango twigs which were ranged from 0.48-0.09 cm2). All pathological results were proved highly significant at $P<0.05$ through ANOVA but isolate to isolate showed non-significant behaviour but they have the positive effect on lesion area. Re-isolation of respective fungi was achieved with 100 percent success which results in the verification of Koch's postulates. DNA of fungal pathogens was successfully extracted through phenol chloroform method. Amplification was done through ITS, b-tubulin gene, and Transcription Elongation Factor (EF1-a) gene primers and the amplified amplicons were sequenced and compared from NCBI which showed 99-100 % similarity with Ceratocystis manginecans. Fungus Ceratocystis manginecans formed one of strongly supported sub-clades through phylogenetic tree. Results obtained through this work would be supportive in establishment of relation of isolates with their region and will give information about pathogenicity level of isolates that would be useful to develop the management policies to reduce the afflictions in orchards caused by mango sudden death.

Keywords : artificial inoculation, mango, Ceratocystis manginecans, phylogenetic, screening
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