EFFECT OF GROWTH STAGE, COTTON GENOTYPE, AND ROOT WOUNDING ON DISEASE DEVELOPMENT TO FUSARIUM WILT CAUSED BY *FUSARIUM OXYSPORUM* F. SP. *VASINFECTUM* RACE 4

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Abstract

Fusarium wilt caused by soil-borne fungus *Fusarium oxysporum* f. sp. *vasinfectum* race 4 (FOV4) is an early season disease causing root rot, and seedling wilt and death. However, it was unknown if cotton growth stages and root wounding affected genotypic responses to FOV4. The objectives of this study were to investigate the effects of cotton growth stage, cultivar, and root wounding on FOV4-associated disease development at 7, 14, 21, and 28 days post inoculation through three trials (Trials 1, 2, and 3) in controlled environmental conditions with temperatures at 21-23 ºC. Seedlings inoculated at the cotyledon stage incurred the highest disease incidence (DI), disease severity rating (DSR), and mortality (MR) in all the three trials, followed by seedlings inoculated at the 1- and 3- true leaf stages in Trial 1 with two replicated tests for three cultivars, at the 1-, 3-, and 5- true leaf stages in Trial 2 with two replicated tests for six cultivars, and at the 3- and 5- true leaf stages in Trial 3 with one test for 32 cultivars and lines, each in descending order. Root wounding at the cotyledon stage followed by immediate inoculation with FOV4 inoculum disarmed resistant mechanisms provided by the root and made all the tested cultivars and lines in Trials 2 and 3 highly susceptible. Among the six cultivars tested in Trial 2, FM 2334GLT and Pima DP 359 RF were the most resistant, Pima S-7 was the most and highly susceptible, and Acala 1517-08, Acala 1517-18 GLS and Pima PHY 881 RF were susceptible.