COMPARISON OF VIRULENCE BETWEEN VASCULAR COMPETENT AND INCOMPETENT *FUSARIUM OXYSPORUM* F. SP. *VASINFECTUM* PATHOTYPES

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Abstract

The Australian biotype and California race 4 isolates of *Fusarium oxysporum* f. sp. vasinfectum (Fov) are pathologically distinct from the Fov US race 1 isolates in that they do not cause disease when stem-puncture inoculated while race 1 isolates do. When root-dip inoculation method was used, both pathotypes induced sever wilt of cotton. Therefore, the Australian biotype and California race 4 were vascular incompetent root rotters while US race 1 was vascular competent vascular invader. The objectives of the present research were to develop a new inoculation method that does not cause plant tissue damage during inoculation process and using this new assay to compare disease responses of the two pathotypes. Cotton root powder was mixed with conidial suspension and incorporated into soil at 5% level. Pre-germinated seedlings less than 1 inch long were transplanted into this soil inoculum. Vascular competent pathotype isolates failed to induce any symptoms using this inoculation protocol, consistent with field observation that this pathotype required nematode to cause severe disease. Both of the vascular incompetent pathotype isolates induced sever disease on Coker 312, reinforcing the concept of these isolates being the root rotters. Unique virulence characteristics of the Australian biotype and California race 4 isolates can also be differentiated using this assay protocol. Australian biotype isolates had a two week delay on foliage wilt symptom onset than the race 4 isolates, but it's symptom progression is much faster and caused higher extent of disease severity and vascular staining than California race 4 isolates, resulting in similar shoot weight reduction by both isolates 9 weeks after inoculation: Australian isolates are aggressive late invader while California race 4 isolates are milder but early invader under present assay protocol.