

Induction of Resistance in Mandarin Plants Against *Fusarium solani* using *Glomus fasciculatum* and *Gigaspora gigantea*

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Abstract—*Citrus reticulata* or most commonly known as mandarin is the most specialized fruit having juicy pulp vesicles. It is cultivated in Darjeeling and Sikkim hills but a decline in the health status is posing a threat to the farmers. *Glomus fasciculatum* and *Gigaspora gigantea*, dominant arbuscular mycorrhizal fungi isolated from mandarin roots has been selected for inoculation to suppress the disease caused by *Fusarium solani*. Polyclonal antibodies (PABs) were raised against mycelial antigens of *F. solani*, IgG were purified and further packaged into immunological formats such as PTA-ELISA, dot immunobinding assay, western blot and indirect immunofluorescence. 18srDNA sequence based molecular detection of root pathogen (*F. solani*, *F. oxysporum* and *F. graminearum*) isolated from mandarin rhizosphere was done. Successful root colonization with *G. fasciculatum* and *Gi. Gigantea* was confirmed by their cellular localization in mandarin root tissue following FITC labelled immunofluorescence assay. Application of *G. fasciculatum* and *Gi. Gigantea* singly or jointly suppressed root rot of mandarin. Enhanced activities of defense enzymes, chitinase, glucanase and peroxidase was evident during disease suppression.