

ANTAGONISTIC MICROORGANISMS TO CONTROL SOIL BORNE PATHOGENS IN BLACK PEPPER (*Piper nigrum* L.) NURSERIES

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Phytophthora spp., *Phythium* spp. and *Rhizoctonia* spp. are the key soil borne pathogens of black pepper nurseries in Sri Lanka. Significant loss of plants immaturely were reported in the nursery stage is suspected due to above pathogens. Some microorganisms show an antagonistic activity towards soil borne pathogens. Present study was conducted to investigate the feasibility of using antagonistic microorganisms to reduce the plant loss at the nursery stage and to identify suitable mass culture media for them. Antagonistic microorganisms namely, *Trichoderma* spp. and *Pseudomonas fluorescens* were isolated from the soils of infected pepper gardens by the dilution plate technique. Pathogenic fungi; *Phytophthora capsici* was isolated by soil baiting technique. Antagonistic ability of *Trichoderma* spp. and *Pseudomonas fluorescens* on *Phytophthora capsici* was tested *in-vitro* by dual culture technique. Inhibition zones developed, indicated the suppression of the growth and sporulation of the pathogens. Pathogen was grown on corn meal agar medium, while *Trichoderma* spp. was mass cultured on tea refuse and *Pseudomonas fluorescens* on crushed sorghum, maize and finger millet seeds. High colony count (1.8×10^{22} cfu/g) of *Pseudomonas fluorescens* in sorghum mass culture indicated the suitability of sorghum as mass culture media. *In-vivo* testing was carried out with the single nodal cuttings of black pepper (variety; MB12) planted in *Trichoderma* (T1), *Pseudomonas fluorescens* (T2), *Trichoderma* + *Pseudomonas* (T3), tea refuse (T4), crushed sorghum seeds (T5) and no treatment (T6) applied potting mixtures. Pots were arranged in RCBD with three replicates. The growth performances (leaf area, root volume, shoot height, shoot and root dry weight) of three months old nursery plants were significantly ($p < 0.05$) greater in T1, T2 and T3 compared to no antagonistic microorganisms applied treatments (T4, T5 and T6). T1 and T3 plants showed 100% survival, while plants in T2 showed 87% survival at nursery, revealed the potential use of antagonistic microorganisms in controlling soil borne pathogens.

Key words: Antagonistic microorganisms, Black pepper nursery, Soil borne pathogens