

## ***Effects of Eight Soilborne Fungi on Seed Germination and Early Seedling Development in Selected Vegetable Crops***

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Soilborne fungi play dual roles in plant growth; facilitating plant growth or posing threats through pathogenesis. The main objective of the research was to study the effect of soilborne mycoflora on seed germination and early seedling development of Tomato (*Thilak*), Chilli (*MI2*), and Eggplant (*Lenairi*). Soil samples were collected from an organic farm located in Yatihelapalla, Rambukkana, Sri Lanka. Eight fungal species were isolated using the dilution method and identified using Commonwealth Mycological Institute descriptions. A germination assay was conducted with fungal spore suspensions ( $10^5$  CFU/mL) from each species as treatments and sterile distilled water as a control. Germination percentages, root & shoot lengths were recorded after 14 days. Germination percentage and root-shoot length values were analyzed using Kruskal-Wallis test and one-way ANOVA, respectively. Dunnett's multiple comparisons with a control were performed to identify significant differences between treatments and the control. Eight species: *Aspergillus* sp.1, *Aspergillus* sp.2, *Aspergillus* sp.3, *Aspergillus* sp.4, *Penicillium* sp.1, *Penicillium* sp.2, *Trichoderma* sp.1, and *Trichoderma* sp.2 were isolated from the soil samples. None of the fungal species isolated significantly enhanced seed germination of tomato ( $P > 0.05$ ). *Aspergillus* sp.4, *Trichoderma* sp.1 and *Trichoderma* sp.2 significantly reduced seed germination of eggplant by 8-18% ( $P < 0.05$ ). *Aspergillus* sp.3 significantly reduced seed germination of chili by 6% ( $P < 0.05$ ). All the fungal species except *Penicillium* sp.1, significantly reduced the shoot lengths of eggplant by 25-40% ( $P < 0.05$ ). All the fungal species except *Trichoderma* sp.1 significantly reduced the root lengths of eggplant by 56-87% ( $P < 0.05$ ). *Aspergillus* sp.3 and *Trichoderma* sp.1 significantly increased the shoot lengths of tomato by 20-28%, while *Aspergillus* sp.1 and *Aspergillus* sp.4 significantly reduced the shoot lengths by 7-55% ( $P < 0.05$ ). *Aspergillus* sp.3 significantly increased the root lengths of chili and tomato by 74% and 79%, respectively ( $P < 0.05$ ). The positive and negative effects of the soilborne fungal isolates on seed germination and seedling growth were species-specific. Further studies on the effects of beneficial fungi on the early development of crop seedlings would be of substantial scientific importance.

**Key words:** Organic Farming, Seed Germination, Seedling Development, Soilborne Fungi