

EFFICACY OF *Trichoderma virens* SOLID FORMULATION FOR MANAGING COWPEA CROWN ROT CAUSED BY *Athelia rolfsii*

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This study evaluated the efficacy of *Trichoderma virens* solid formulation against *Athelia rolfsii* and assessed biocontrol ability, viability, plant growth promotion and yield enhancement ability. Symptomatic cowpea plants were collected from the faculty field, Faculty of Agriculture, Anuradhapura for pathogen isolation. Along with pathogenicity test and dual plate assay, pot and field experiments were conducted under controlled environment and open field conditions respectively. *A. rolfsii* was applied to the crown area of seedlings (6×10^5 CFU) using agar disc method. *Trichoderma virens* was applied with spore suspension at a concentration of 7×10^8 spore mL^{-1} at seeding and 3×10^6 spore mL^{-1} in 3-week intervals. The efficacy of *T. virens* was tested in a pot trial with eight treatments: T1: only soil, T2: *A. rolfsii* and only soil, T3: *A. rolfsii* and *T. virens* only, T4: *A. rolfsii* and full DOA recommendation, T5: *A. rolfsii* with full DOA and *T. virens*, T6: *A. rolfsii* and half DOA, T7: *A. rolfsii*, *T. virens* with half DOA, and T8: *A. rolfsii* and carbendazim. Plant growth parameters and yield components were meticulously recorded. Additionally, CFU and disease incidence were monitored. Data analysis was conducted using repeated mixed effect model, three-way and four-way ANOVA models in SAS studio version 9.0 software. The pathogen was confirmed morphologically and molecularly as *A. rolfsii*. Pathogenicity was confirmed via Koch's postulate. *T. virens* demonstrated 86.02% inhibition of *A. rolfsii* in a dual plate assay. The application of *T. virens* exhibited zero disease incidence. Treatments with *T. virens* have a significant effect ($p < 0.05$) on pod number, root length and seed weight. Results indicated that *T. virens* remained viable in soil throughout the experimental period, ensuring sustained benefits. In conclusion, *T. virens* demonstrates significant potential as a biological alternative to chemical fungicides for managing *Athelia rolfsii*, effectively promoting growth and suppressing disease in cowpea plants.

Keywords: Agar disc method, Disease incidence, Molecularly