

Efficacy of *Trichoderma asperellum* Seed Treatment and Ridomil® Application Regime in Managing Late Blight (*Phytophthora infestans*) on Potato (*Solanum tuberosum*)

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The overuse of fungicides to manage late blight has led to emergence of more aggressive strains raising environmental, economic and health concerns. The objectives of the study were to determine the cost benefit and efficacy of *T. asperellum* (3×10^6 , 7×10^6 and 1×10^6 CFU/mL) seed treatment and Ridomil® (Metalaxyl 4% + Mancozeb 64%) application interval (21, 14 and 7 days interval) in managing late blight on potato tuber and apical cutting seed crop by either peridermal injection or dipping. Costs and benefits associated with apical cutting and tuber seed treatment were analyzed using partial budgeting to calculate marginal rate of return percent (MRR %). Results showed that there was no significant difference between 7 and 14 days interval in terms of yield and disease severity. Apical cuttings were highly infected by late blight resulting to lower yield and net loss compared to tuber seed crop. *T. asperellum* at 33% concentration was ineffective in managing *P. infestans*. *T. asperellum* at 66% and 100% concentration reduced early late blight infection and were not significantly different in terms of disease severity and yield in all Ridomil® application regimes. Combination of *T. asperellum* at 66% concentration with 14 days interval had the highest (969%) MRR% compared to any other combination. Peridermal injection had significantly higher yield and benefits than dipping. The results of the study suggest that *T. asperellum* seed treatment at 66% concentration can increase fungicide application interval by 7 days while effectively managing late blight. This will not only reduce the amount of fungicides applied and their negative effects but also will contribute to improved yield as well improve farm net income.

Keywords: Apical cuttings, Efficacy, Ridomil® *Trichoderma asperellum*